

# THE BELVOIR RANCH AND BIG HOLE MASTER PLAN

SEPTEMBER 2008

## CHEYENNE'S RESOURCE FOR THE FUTURE: THE BELVOIR RANCH AND THE BIG HOLE PROPERTIES

*Located 16 miles west of Cheyenne, Belvoir Ranch and The Big Hole consist of 18,800 acres with an additional 3,400 acres of land leased from the State of Wyoming. The landscape is a rich mosaic of ecologies, from rolling prairie to spectacular red rock canyon, supporting antelope, deer, small mammals, and varied bird species, including golden eagles.*

*The 2003 purchase of Belvoir Ranch was funded by The City of Cheyenne Board of Public Utilities (BOPU) to expand the City's water supply, and by the Department of Public Works for a possible landfill site. The property has functioned as a working cattle ranch since 1874. In addition to recreation, the property also offers potential for "green energy" development, including wind and solar power.*

*The Big Hole was purchased in 2005 from The Nature Conservancy, which holds a conservation agreement on the property. The property will remain natural, allowing selected, low-impact recreational activities. The Big Hole will be managed through a partnership between the City of Cheyenne, Larimer County, and the Nature Conservancy.*

*The master plan for these properties, presented in this document encompasses both purchased and leased lands, with proposals for improvements on leased lands subject to the State Land Board approval process. The Master Plan will be adopted to complement PlanCheyenne, the Cheyenne Area Plan.*



## WHY IS OPEN LAND IMPORTANT TO CHEYENNE?



*The value of ranchland protection has been estimated at \$3.3 million to Cheyenne residents per year.*

*PlanCheyenne* presents a strong platform for “smart growth” in Cheyenne. “Smart growth” advocates sustainable land use principles, including compact development, walkable neighborhoods, preservation of open space and natural features, varied and connected transportation options, and a strong sense of place. The Belvoir Ranch and Big Hole properties support the City’s “smart growth” strategy in key ways:

Preserving large expanses of open space can encourage more compact development patterns in the City; demand for large-lot or “ranchette” subdivisions may be reduced.

Preserving such a large expanse of open lands can afford an opportunity for activities such as horseback riding, rodeo, and wagon rides, that are a part of the area’s cultural heritage.

Preserving a large expanse of open space at the edge of the community can provide separation from new development outside the City’s limits.

There are also the economic and quality of life benefits that come from open space preservation, as summarized below.

***Attract a talented workforce:*** quality of life is an important factor for individuals in deciding where to live and work, and for companies in deciding where to relocate or expand. A 1991 study of 174 companies that chose to relocate to Colorado found that among businesses of 40 people or less, 26% stated open space and recreation opportunities as the primary reason for their relocation decision.

***Realize increases in property values:*** Proximity to open lands and conservation areas enhances residential property values, by as much as 16 percent.

***Benefit from ecosystem functions:*** Additional value and benefits from open space come from the value of the services provided by intact and healthy ecosystems, like cleaner stormwater, which reduces demands for engineered infrastructure, to ecological diversity, which can reduce the incidence of wildfires.

***Expand the tax base through recreation-related activities and purchases:*** This could come from user or permit fees, and from the “multiplier effects” of related purchases of equipment, lodging, and other consumables.

***Experience economic value from protection and conservation of open lands:*** The value of preserving large tracts of ranchland is estimated by the US Forest Service at \$3.3 million annually in the Cheyenne region. This value increases as time passes and property values increase.



## A VISION FOR STEWARDSHIP OF BELVOIR RANCH AND THE BIG HOLE



*Lone Tree Creek (above) makes up less than five percent of the Ranch, yet is habitat to eighty percent of the species found there.*

### A VISION FOR STEWARDSHIP OF BELVOIR RANCH AND THE BIG HOLE

The community's vision for Belvoir Ranch and The Big Hole is an enduring statement about the value and significance of these properties and how they should be preserved and managed. It is a statement about a desired future that should inspire and motivate, even though fully realizing the vision may take many years.

Finally, a good vision statement is inclusive, flexible enough to support many ideas and points of view. The Cheyenne community's vision for Belvoir Ranch is summarized below and in the core design principles in the box to the right.

*Belvoir Ranch is a unique and significant piece of Cheyenne's rich cultural heritage and regional open space system.*

*To be responsible stewards of the land, City of Cheyenne and the Board of Public Utilities are seeking to manage it as a sustainable "working landscape" that contributes to the area's economy and its quality of life.*

*The Ranch shall be managed as a community asset and legacy, balancing uses and resources in such a way as to sustain its unique landscape character and heritage, for generations to come.*

### Core Design Principles

*Principle 1: Minimize new disturbance to the site and landscape.*

*Principle 2: Preserve and protect key natural features and habitat.*

*Principle 3: Protect, enhance and interpret natural and cultural resources.*

*Principle 4: Make education and interpretation a key component of Ranch activity.*

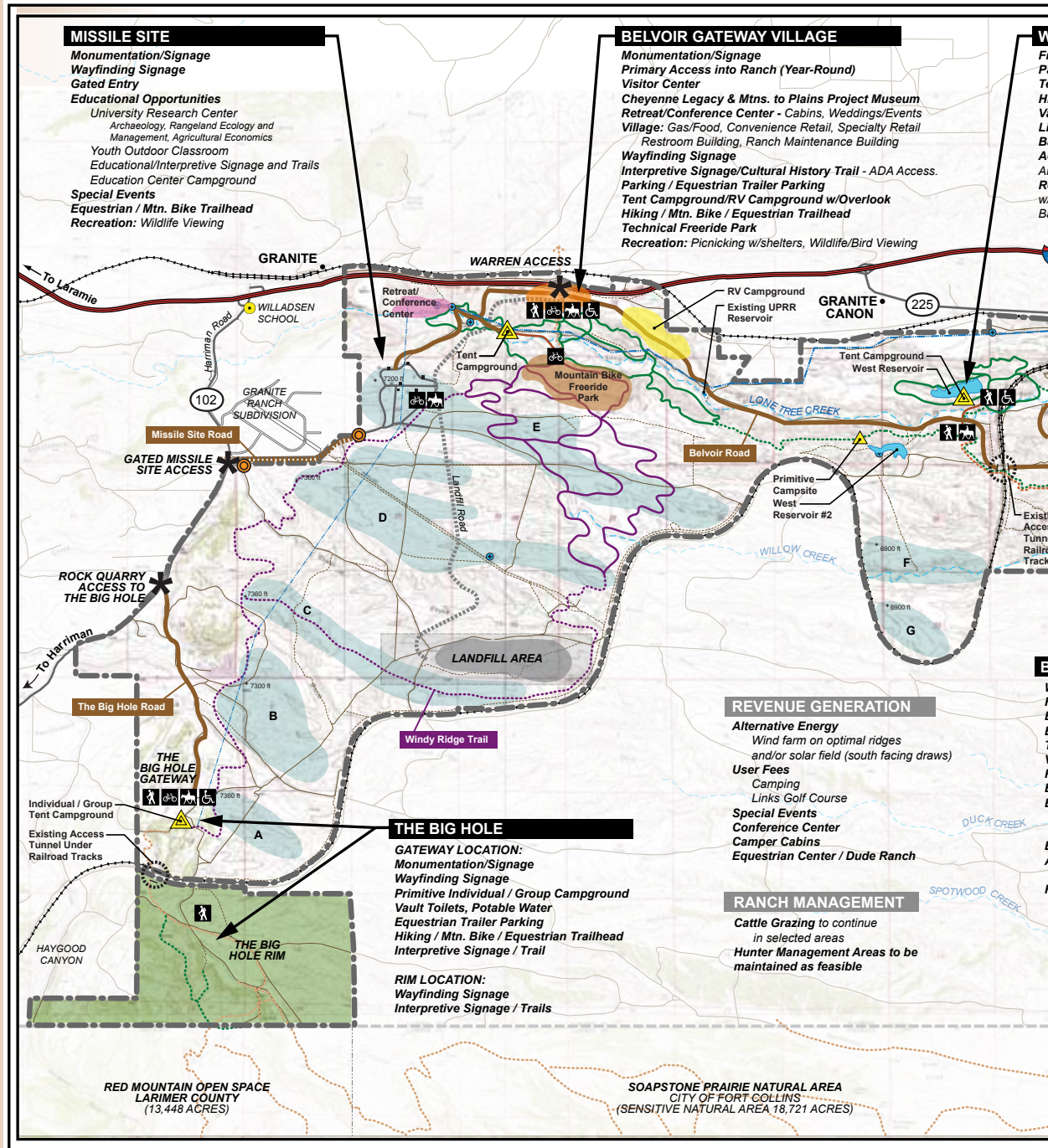
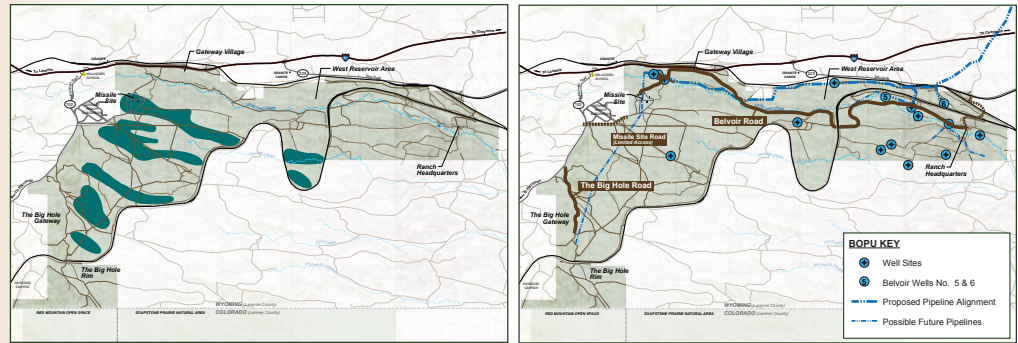
*Principle 5: Provide for compatible public use, both in activities and in intensity of use, that does not overwhelm the properties' essential features and qualities.*

*Principle 6: Design facilities using sustainable, "green building" principles.*

*Principle 7: Implement improvements that are economically sustainable.*

Potential well sites and pipe corridors have been identified for municipal water supply. These improvements will be phased in based on community need and available funding. (Left)

Seven ridge areas (shown above in blue) have been identified as optimal for wind generation. These improvements could also be phased in upon completion of engineering feasibility studies and funding. (Right).





# SUMMARY OF THE MASTER PLAN AND PHASING STRATEGY

The Master Development Plan below illustrates proposals for possible future activities at the Ranch and The Big Hole. They include proposed locations for future water supply lines, wells, and possible surface reservoir storage; a site for a possible landfill; recreational activities; continued ranching and grazing; and opportunities for possible wind energy and/or solar power generation.

## Highlights of the 5-Year Recreation Improvements Plan

Almost 20 miles of hiking trails, over 7 miles of biking trails, and over 28 miles of equestrian access, including a 5-mile loop trail at the Ranch Headquarters

Parking and restrooms

Tent campground at the Belvoir Trailhead

**Total Estimated Cost: \$1.8 M (2008 dollars)**

## Highlights of the 15-Year Recreation Improvements Plan

An additional 12.5 miles of hiking trails, 14 miles mountain bike trails, 10.8 miles of equestrian trails

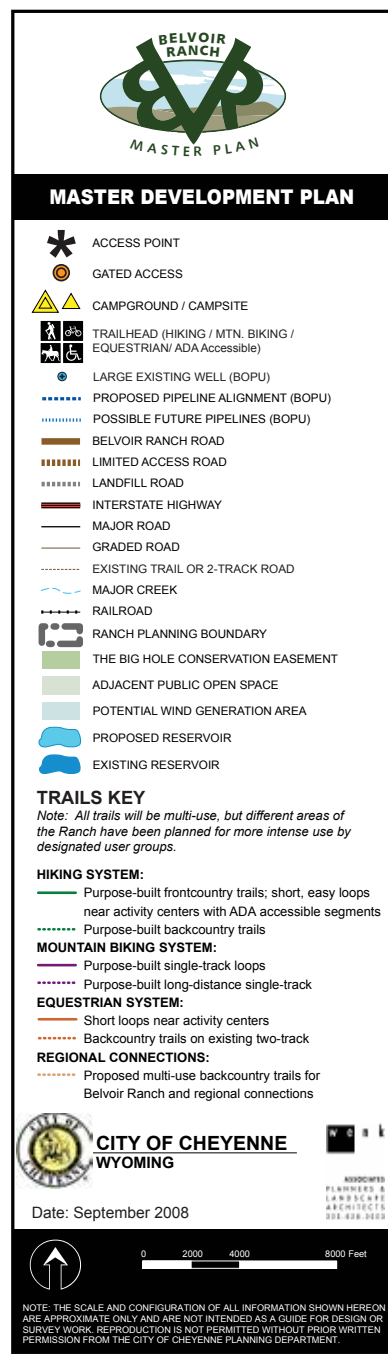
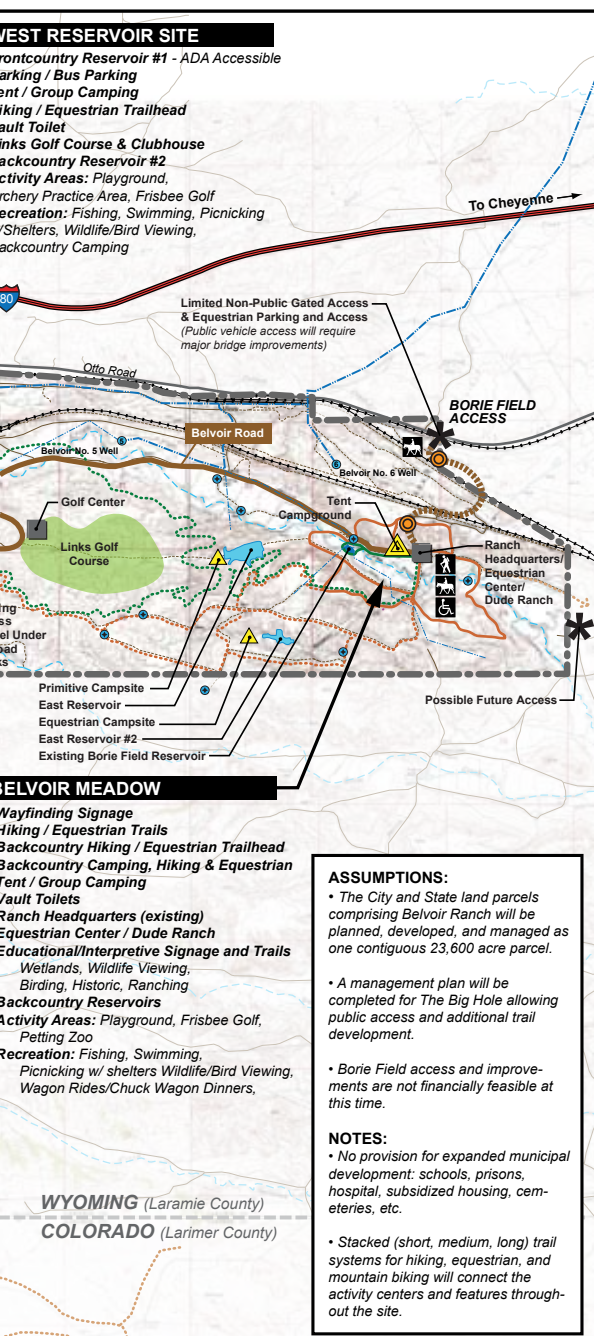
RV Campground, tent campgrounds, group picnic area, and overlooks

Potential locations for reservoirs and fishing amenities

Links Golf Course and club house

Equestrian Center

**Total Estimated Cost: \$30.9 M (2008 dollars)**



## POLICIES FOR MANAGING THE PROPERTIES



View of The Big Hole from the Rim.

To ensure sustainable stewardship of the Ranch and Big Hole properties, a series of management policies have been developed to address public use, safety and security, ranch and landscape management, and the built environment. Core policies that will govern management of the properties are summarized below.

### *Public Access and Use*

Properties will be opened to public access year round, with limited seasonal closures.

Dogs will only be allowed on leash and in designated areas.

No off-road or off-trail uses will be permitted.

All-terrain vehicles will be prohibited.

Campsites and trails will be closed as conditions warrant.

### *Public Safety and Law Enforcement*

Volunteer rangers and campsite hosts will aid in monitoring the ranch.

Public access will be limited to designated roads; use of fire roads and non-designated railroad crossings will be prohibited.

### *Ranch and Landscape Management*

Trails will be closed as needed to accommodate cattle movement and grazing.

The number of cattle grazed shall not exceed the property's "carrying capacity."

Wildfires will be suppressed to minimize introduction of invasive species.

Targeted controlled burns may occur in selected areas for restoration purposes.

Cost-effective weed management "best practices" will be employed.

### *The Built Environment*

All built facilities (structures, gateways, signage) shall be compatible with the site's character.

Materials and facilities shall be designed to minimize maintenance and capital repair expenditures.

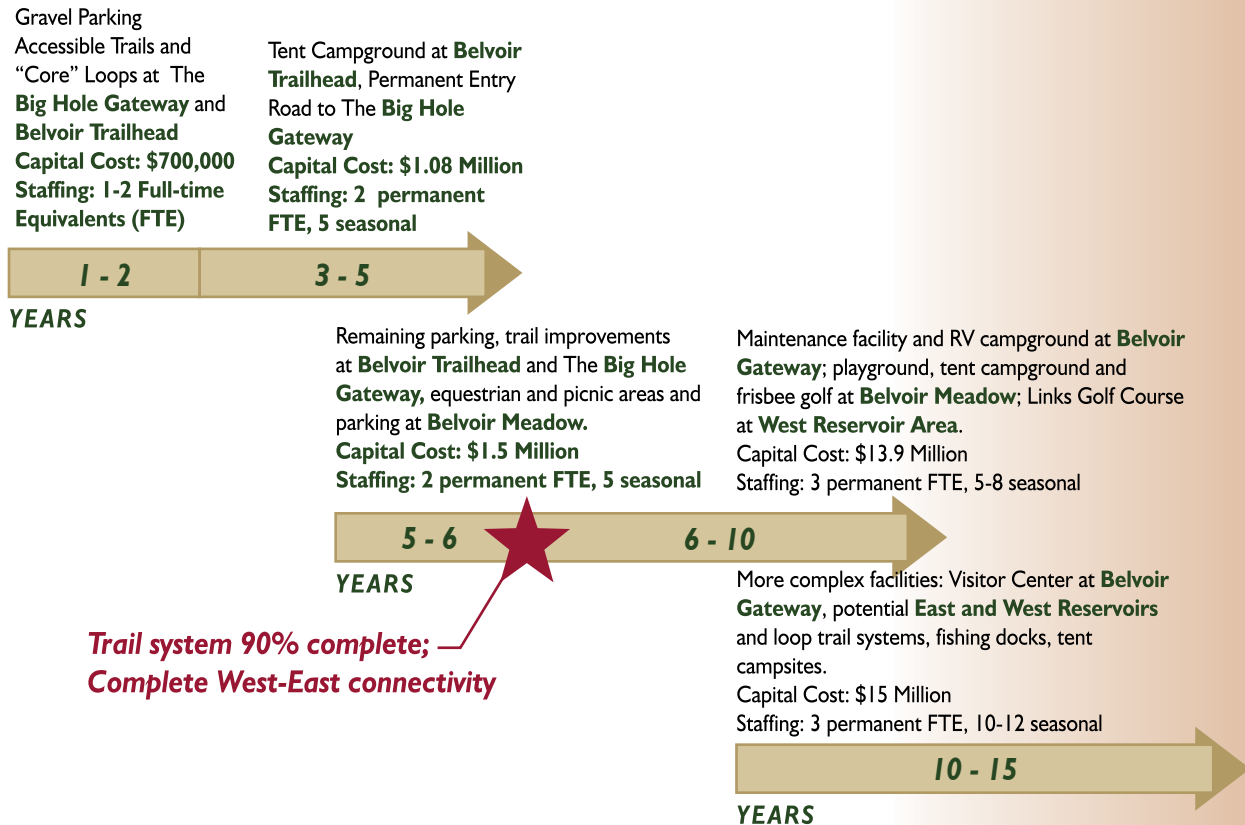
Lighting shall be minimized to reflect "Dark Sky" principles.

Utilities shall be located underground where feasible to preserve key views.



## ACTION STEPS FOR IMPLEMENTATION

The 5- and 15-year plans for recreation improvements are intended to be flexible and allow the City to implement projects as best responds to community needs and funding availability. A suggested phase-in strategy, with associated capital and staffing costs (in 2008 dollars), is illustrated below.



Other administrative actions that are necessary to support implementation include:

Establishing an ongoing process for coordinating with adjacent jurisdictions, including Larimer County, CO, The Nature Conservancy, and Wyoming State Parks to ensure consistent application of policies and regulations;

Establishing an ongoing process for coordinating with the State Land Board regarding permissible uses and improvements on leased parcels;

Identifying necessary plans, studies, permits and surveys, including archaeological and cultural resource studies, that would need to be undertaken before improvements can be constructed; Routine surveys of Ranch visitors and the general public will also be extremely useful in understanding levels and frequency of use and support for new improvements. These surveys could be web-based and hosted and tabulated for a very small financial investment.

Developing a plan for increasing community awareness of the Ranch and “marketing” its potential, taking advantage of the website and guided tours; and

Identifying immediate grant opportunities available through the State Recreational Trails Program (maximum of \$50,000) and the Wyoming Wildlife and Natural Resource Trust program (up to \$200,000). Initial opportunities might include providing marked trails and interpretive signage to The Big Hole; developing a comprehensive weed management program; and a “seed” grant to develop a naturalist program, including recruitment of partners, development of curriculum, and creation of guided nature hikes.



## FOR MORE INFORMATION

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*Visit our website at [www.belvoirranch.org](http://www.belvoirranch.org).*

*In addition to videos and images of the properties, the following planning documents are available:*

### **Snapshot:**

*An inventory and analysis of existing site conditions at Belvoir Ranch and The Big Hole*

### **Structure:**

*Vision and principles for sustainable site development, including resource management, facilities and development, access and circulation, and property management*

### **Shape:**

*The physical master plan and policies for managing public use, public safety, the ranch and landscape, and built environment*

### **Build:**

*Phasing plans, estimated costs, financing strategies, and implementation action steps*



# SNAPSHOT ATLAS

SEPTEMBER 2008















## Acknowledgements

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## Project Overview

### FACTS AT A GLANCE

The Belvoir Ranch Master Plan provides a comprehensive vision which will ultimately result in a framework plan, implementation approach and management strategy for the property. As the City of Cheyenne Parks and Recreation Master Plan points out, Belvoir Ranch is likely to become a Regional Open Space adding significant value to the community.

Planning efforts will focus on open space, recreation and natural values, specific development goals and resource management, and long-range planning implications for the community, while accounting for the various municipal needs that triggered its purchase: water, development and landfill siting.

Emphasis is placed on making this a community driven process to identify and develop the vision and character of the property as we plan for the future and focus on the goals of quality and authenticity.

### PLAN PHASES

The final plan will be a component of PlanCheyenne, and the project follows PlanCheyenne's four phases: snapshot, structure, shape, and build:

**Snapshot** involves collecting, assembling and analyzing relevant background data; assessment of existing conditions; and assessment of project needs, opportunities and constraints to "atlas" the project area and guide development of the master plan. From this effort, we are able to determine the extent to which the Belvoir Ranch can serve the community.

**Structure** involves development of the vision and preferred character for the site in a multi-day charette workshop, incorporating components introduced in PlanCheyenne. This plan builds upon the initial vision for Belvoir Ranch.



Overlooking Lone Tree Creek on Belvoir Ranch, Rocky Mountain National Park is in the background.



Cattle Grazing on Belvoir Ranch.

### VISION

*Belvoir Ranch is a unique and significant piece of Cheyenne's rich cultural heritage and regional open space system. To be responsible stewards of the land, City of Cheyenne and the Board of Public Utilities are seeking to manage it as a sustainable "working landscape" that contributes to the area's economy and its quality of life. The Ranch shall be managed as a community asset and legacy, balancing uses and resources in such a way as to sustain its unique landscape character and heritage, for generations to come.*



## PLAN PHASES (CONT.)

**Shape** will result in Alternative Land Use Plans for the entire project area incorporating the vision and priorities. The Shape phase of planning affords the community with an analysis of design elements, identified in the Structure phase of planning, critical to improving Cheyenne's quality of life. From the Alternative Land Use Plan discussions, a Preferred Land Use Plan, Policies and planning document will be developed to guide the future direction and development of the project property. The policies developed and adopted will assist with decision-making to support and further the community's vision for the property and their community.

**Build** will result in Final Master Plan Documents. The build phase will be the identification and development of implementation strategies, tools and action steps to carry out the community's selected direction of the Preferred Land Use Plan.



*Overlooking the Big Hole.*



*Atlas Missile Silos on Belvoir Ranch.*



*Remnants of historic homesteads along Lone Tree Creek on Belvoir Ranch.*

### CONTACT:

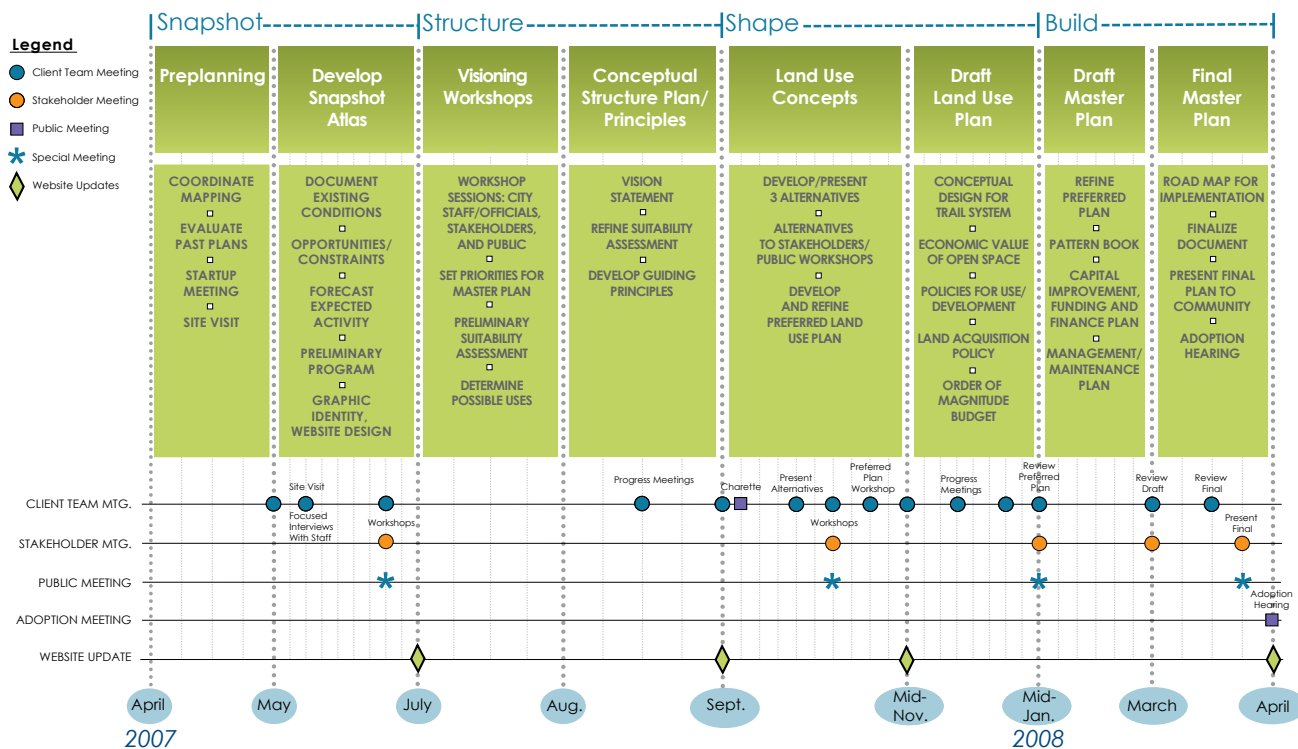
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# Timeline

# PROJECT PROCESS



### Legend

-  Client Team Meeting
-  Stakeholder Meeting
-  Public Meeting
-  Special Meeting
-  Website Updates

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## Ranch Purchase

### OVERVIEW

The area referred to as Belvoir Ranch contains two properties – the historic Belvoir Ranch, and The Big Hole. Together, these areas consist of 18,800 deeded acres and 3,400 acres of land leased from the State of Wyoming. The two properties are currently being studied for their potential to provide water resources, economic benefits, and recreational uses for the City of Cheyenne. The planning process will consider many uses for Belvoir, including wind energy, continued cattle grazing, different types of recreation, and interpretation of the Ranch's history.

### BELVOIR RANCH

- The Ranch was purchased by the City of Cheyenne in 2003 as a cooperative effort between the City of Cheyenne's Board of Public Utilities and the City Public Works Landfill Fund.
- The City paid \$5.9 million for over 17,000 deeded acres along with rights to 3,400 acres of land leased from the State of Wyoming.
- Stewardship partners on this purchase include the Laramie County Conservation District and the National Resource Conservation Service.
- Initial uses identified for the site were municipal water resource development, a 640 acre municipal landfill, and recreation activities.

### BIG HOLE

- This land was acquired in 2005 for \$525,000 as part of a multi-state open space initiative. It was purchased from The Nature Conservancy, which now holds a conservation easement on the property – one of the first created in the State of Wyoming under new 2005 legislation.
- The Big Hole consists of an 1,800 acre parcel south of Belvoir Ranch and includes 1,000 acres of rim pasture and 800 acres of spectacular canyon scenery at the Wyoming/Colorado border.
- It is part of the regional area identified as the Laramie Foothills/Mountain to Plains Project which is sponsored by Larimer County, the City of Fort Collins, The Nature Conservancy and the Legacy Land Trust. This effort will protect 55,400 acres north of Fort Collins, creating a mountain to plains conservation zone of approximately 140,000 acres.
- The area is home to nesting golden eagles, red-tailed hawks, prairie falcons, mountain lions, black-tailed prairie dogs, elk, antelope and mule-deer.
- The property will most likely remain natural, allowing passive recreational opportunities while protecting fragile ecosystems.
- Management of The Big Hole will happen through a joint management program with Larimer County, Colorado, and The Nature Conservancy.



*Belvoir Ranch provides opportunities for municipal water development, a landfill site, city revenue and recreation.*



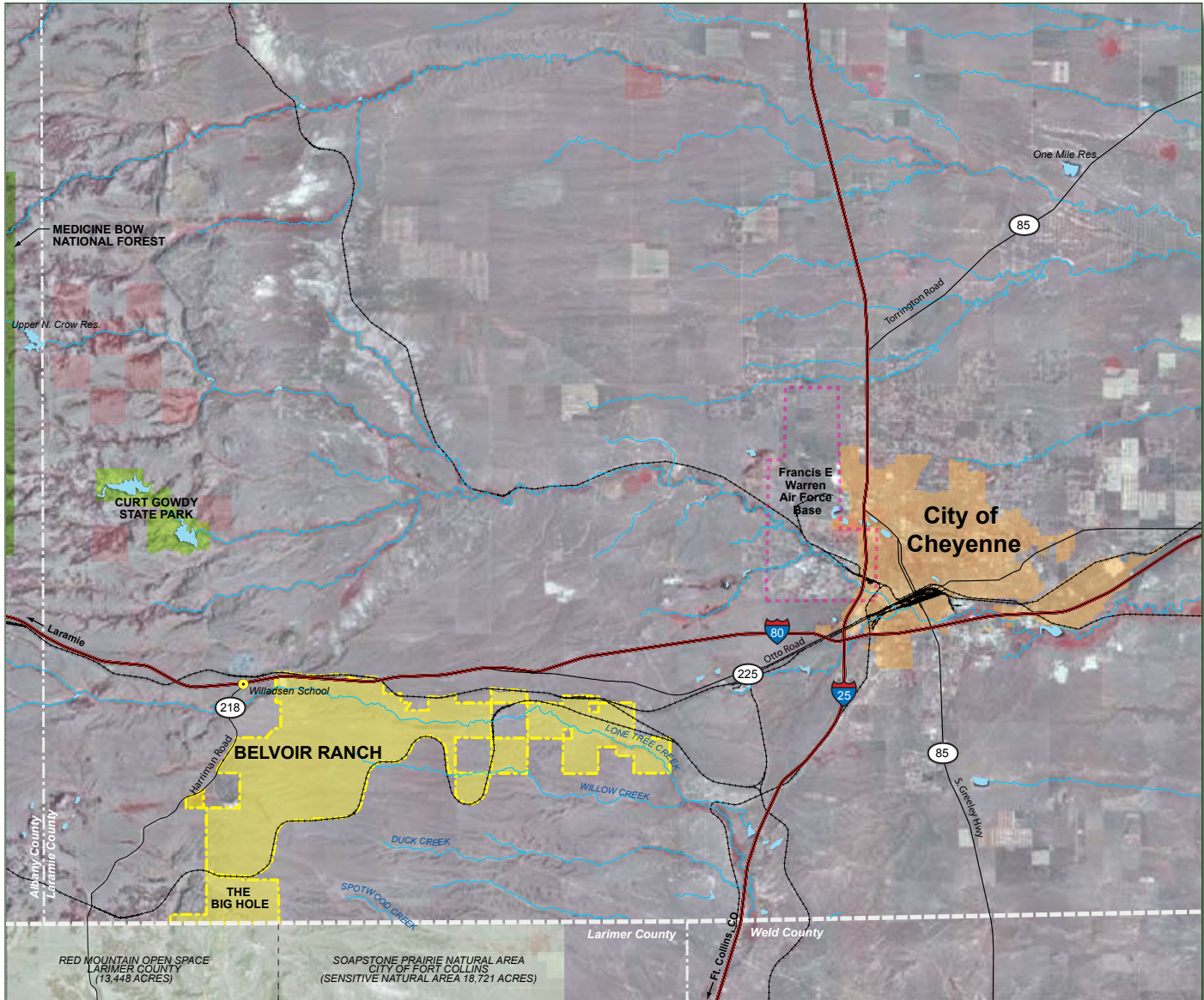
*The Big Hole creates continuous open space and potential trail access to Colorado.*

### TRENDS AND KEY ISSUES

- ✦ A 2005 community survey showed that over 60% of Cheyenne residents would like recreation facilities at Belvoir.
- ✦ The Ranch's history is strongly tied to Cheyenne's history, and has remnants of historic railroad uses, homesteads, and missile silo sites.
- ✦ Belvoir currently covers its management expenses by producing revenue from cattle grazing.



# Project Locator Map





## History Of The Land

### PREHISTORY

Signs of human habitation and use are found throughout the Belvoir Ranch and The Big Hole, as the area was used by both prehistoric and modern peoples. The area surrounding Belvoir Ranch has been used by people since at least 11,000 before current era (BCE). From that time to about 7,000 BCE, the area was known and used by Paleo-Indians. The world-famous Lindenmeier prehistoric site lies just a few miles to the south of the Ranch in Colorado. There are other known prehistoric sites to the west of the Ranch near the railroad station referred to as Harriman, just west and south, and again in Colorado. After the last Ice Age, Utes, Shoshoni, Northern Arapahoe, Northern Cheyenne, and Lakota people used the area around Belvoir as a natural corridor into the mountains west of the Ranch. These peoples maintained summer and winter camps, conducted year-round hunting, and used the land for their spiritual needs.

### HOMESTEADING

The Homestead Act of 1862 was passed by the U.S. Congress to provide for the transfer of a quarter-section (160 acres) of free public land to homesteaders. The land belonged to the homesteader at the end of five years if they lived there, built a house, dug a well, plowed ground, and fenced the land.

The area currently referred to as the Belvoir Ranch has evolved over the past approximately 140 years from several smaller homesteads (primarily in the western portion of the Ranch), land once owned by the Union Pacific Railroad (part of their original Patent Grants received when building the Transcontinental Railroad), land leased from the State of Wyoming (just a little over three and a half Sections) and part of the vast holding of the former Warren Livestock Company.

Due to his success in the cattle ranching industry, Francis E. Warren, became a key figure in Cheyenne's history. Several other land owners who originally homesteaded Ranch properties include: Alex Duffey (1885), William Williams (1885), Thomas McGee (1890's), Ora Haley (1910; Haley was the previous owner of approximately 8 Sections), the Neilson Brothers, A.H. Willadsen, Gilchrest, John Bickhold, Hans Wright, and James Hunt. Several of these families still hold land near the Ranch.

### THE TRANSCONTINENTAL RAILROAD

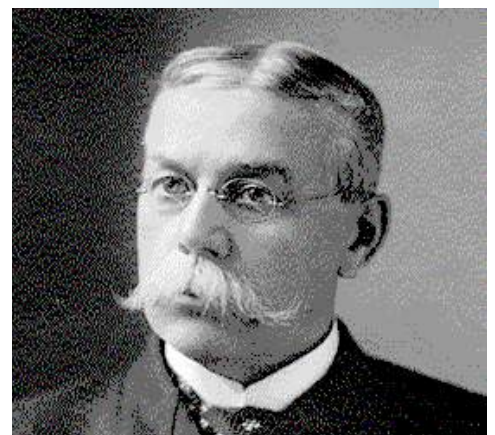
Passage of The Railroad Act in 1862 signified government support for a transcontinental railroad and helped create the Union Pacific Railroad. The route was built in the 1860's to link the railway network of the Eastern United States with California. It was completed on May 10, 1869, and the famous "golden spike" event officially joined the Central Pacific and Union Pacific railroads at Promontory Summit, Utah. The Transcontinental Railroad created a modern, nation-wide transportation network that revolutionized the population and



*Remnants of a historic homestead near Williams pasture.*



*Union Pacific Railroad track laying in Wyoming (photo: Wyoming Tales and Trails.com)*



*Francis E. Warren (photo: Wyoming State Historic Preservation Office)*



## TRENDS AND KEY ISSUES

- ★ Missile silos on the Ranch present an opportunity to interpret Cold War history.
- ★ The western side of Belvoir Ranch has several areas in need of surveying for American Indian cultural artifacts.
- ★ Although many homestead sites have been looted, they still provide traces of early settlers.
- ★ The Twin Mountain Wagon Road can still be followed through the Ranch.
- ★ An early railroad pumphouse and other water infrastructure are still existing as remnants of early UPRR history.



*Lincoln Highway / I-80*

## TRANSCONTINENTAL RAILROAD (CONT.)

economy of the American West, making the wagon trains of previous decades obsolete.

As the Union Pacific Railroad crossed the Wyoming Territory, surveyors moved ahead of the line, dividing prospective towns into lots, which in turn were sold to emigrants carried west by the railroad. On July 4, 1867, the railroad's chief engineer, General Grenville M. Dodge, selected a location that would become a division point for the Union Pacific and named it Cheyenne.

By year's end, the new city housed thousands of people and Native American attacks on the new railroad were prevalent. To solve the problem, the Military established forts to protect the railroad and its workers. Wyoming became home to Ft. Russell, Ft. Sanders, Ft. Fred Steele, Ft. Rawlins and Ft. Bridger. Of those forts, only D. A. Russell outside of Cheyenne became permanent, and today is known as F.E. Warren Air Force Base.

Development of the West was greatly influenced by the railroad. Towns such as Cheyenne were needed to provide hotels and eating houses for railroad workers and passengers. Military forts were needed to offer protection and a variety of infrastructure, including roundhouses, windmills and water tanks – required for the steam-powered locomotives. Cheyenne became the meeting place for the large ranchers and their Wyoming Stock Growers Association due to being the seat of the stockyards where cattle were loaded on to the UPRR. At the northern edge of the Belvoir Ranch, Borie, Emkay, Otto and Granite Canon stations offered the infrastructure needed for westward expansion.

## LINCOLN HIGHWAY

Early homesteaders arrived by wagon, with the Twin Mountain Wagon Road running the entire length of Belvoir Ranch from east to west. However, the landscape began to change with the introduction of the automobile in the early 1900's.

In 1916, the Lincoln Highway was conceived as America's first transcontinental highway for automobile travel. The route extended from San Francisco to New York, connecting Cheyenne, Corlett Station, Borie Station, Otto Station and Granite Canon as it skirted the Belvoir Ranch properties. The route was not a nationally-funded highway, but instead, was a collection of locally funded and maintained roads put together as a single route marked as the Lincoln Highway.

The Lincoln Highway later became U.S. 30 and today represents much of the route of Interstate 80. In 1926, U.S. 30 extended between Granger, WY and Philadelphia, PA and followed the historic Lincoln Highway for its entire route through Wyoming. Between 1926 and 1972, U.S. 30 had a split route in southwestern Wyoming allowing U.S. 30 to serve northern Utah and southern Idaho. The northern route of U.S. 30 followed modern-day Interstate 86 east from Rupert to American Falls and Pocatello. U.S. 30 decreased in importance with emerging plans for Interstate 80 and the 1956 passage of the Interstate Highway System Act.



## KEY FACTS FOR BELVOIR

- Construction of the Wyoming segment of I-80 along the Lincoln Highway route began in November of 1962 and the connection with I-30 was completed in the spring of 1977.
- Ranching history of Belvoir Ranch began in the early 1860's with the Ranch having played host to several early homesteads.
- The Warren Livestock Company was only one of the many holdings of Francis E. Warren, Territorial Governor, brief First State Governor, and U.S. Senator until his death in 1929. The company was founded in 1874. In 1905, then Captain John (Blackjack) Pershing married one of Warren's daughters while he was stationed at Fort D. A. Russell and Warren is said to have given his "Cabin on the Ranch" to his daughter and new son-in-law. This was later to become the Belvoir Ranch House. The area came equipped with fine stables, a horse race track, tennis courts, and the like.
- The name Belvoir is thought to have originated from the Civil War post Fort Belvoir, Virginia, where Warren, who earned a Congressional Medal of Honor, may have been posted. Alternatively, Warren may have taken the name from Belvoir Gardens dating to the Revolutionary War. Belvoir translates as 'good view' in French.
- Warren's headquarters—also known as the "Cabin on the Ranch"—was roughly located at the site of the current Belvoir Ranch headquarters area. It included tennis courts and a horse racetrack.
- During the Cold War, the Air Force constructed several Atlas Missile silos on Belvoir Ranch. These were abandoned several years later, their equipment sold for scrap and the land reverted to its original owners.
- The UPRR used land within the Ranch for steam train service facilities. These trains only held enough water to travel from 10 to 14 miles, so the Borie area had a water tower and UPRR built water supply infrastructure along Lonetree Creek.
- Transportation-wise, the Ranch also held the Twin Mountain Wagon Road which provided a corridor from Camp Carlin to Ft. Sanders - a military camp west of Belvoir Ranch.
- The Twin Mountain Wagon Road continued to Laramie and was used by stagecoaches as well as mule-driven supply wagons. There are two building foundations on the northern side of the Ranch that might have been used for stagecoach or mule-team stops.
- Belvoir Ranch has been sold several times throughout its history but has remained in private control since the early patent grants dating from 1867. Several families that have owned parts of Belvoir over the years still hold land near the Ranch.



*"Cabin on the Ranch"*



*Ruins of Union Pacific Railroad water pump station.*



*Historic Homestead remnants including windrow of willows.*



*Twin Mountain Wagon Road looking west.*



*Historic Union Pacific Railroad Reservoir used for refilling steam engines.*



*Abandoned missile silos on Belvoir.*

## KEY DATES AT BELVOIR

- 1862 Homestead Act Passed and Settlers move into area
- 1867 Union Pacific Railroad (UPRR) constructed on northern side of Belvoir Ranch
- 1867 Fort D.A. Russel built to protect UPRR; Twin Mountain Wagon Road in use
- 1867 Camp Carlin built to supply forts and treaty goods
- 1874 Warren Livestock Company formed
- 1890 Camp Carlin abandoned
- 1890's Warren builds "Cabin on the Ranch"
- 1930's Twin Mountain Wagon Road abandoned
- 1930's "Cabin on the Ranch" burns down
- 1954 UPRR builds three-track on southern boundary of Belvoir Ranch
- 1958 Atlas Missile Silos constructed
- 1964 Missile Silos abandoned for newer Minuteman Missile Technology
- 2003 City of Cheyenne Purchases Belvoir Ranch
- 2005 City of Cheyenne Purchases The Big Hole

## Regional Ecology

### GENERAL HABITAT DESCRIPTION

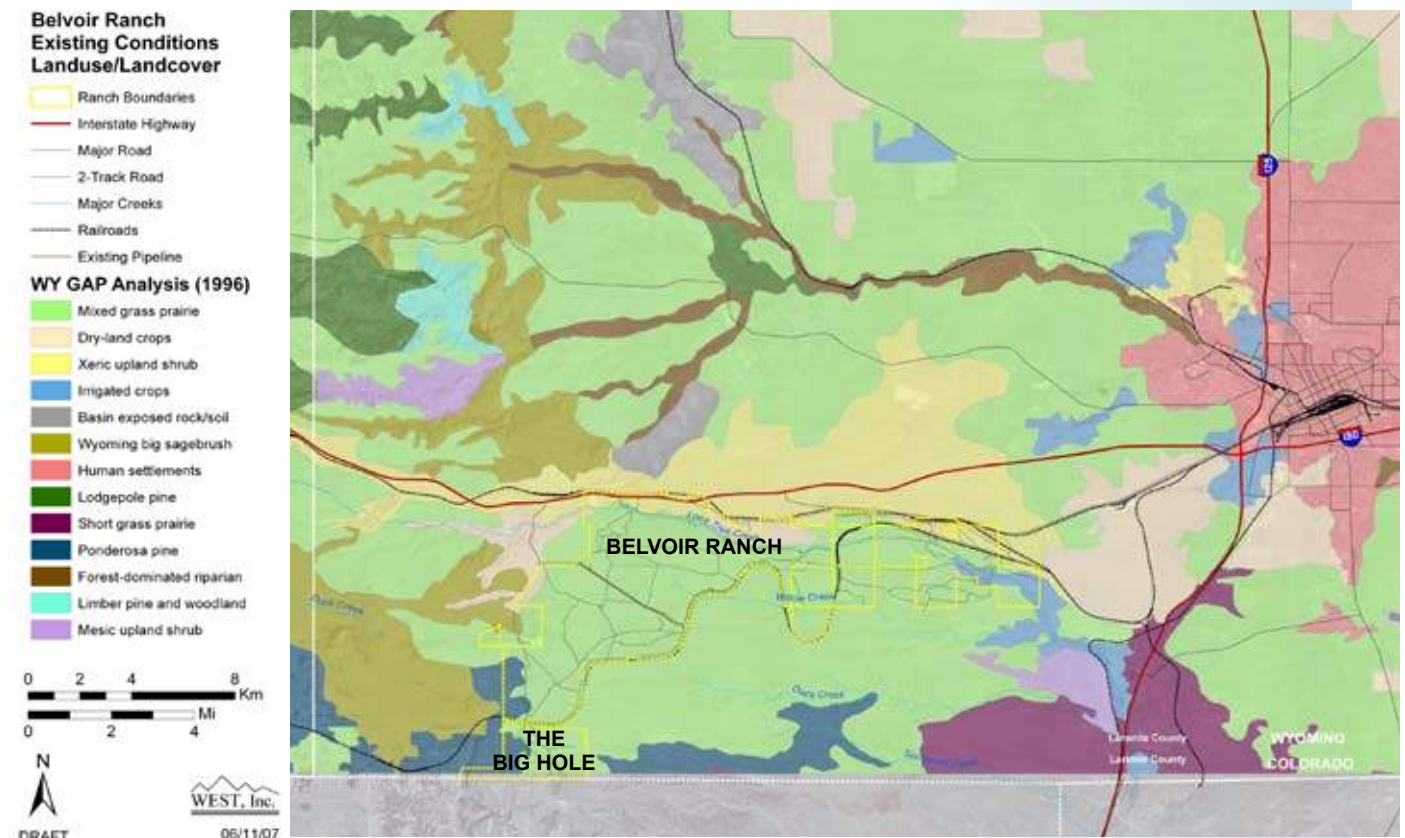
The dominant habitat type on the Belvoir Ranch is mixed-grass prairie, which composes 86% of the Ranch. Other habitat types present include mountain mahogany (8.7%), irrigated hay fields (2.9%), ponderosa pine (2.5%), and Wyoming big sagebrush (0.09%).

From a landscape perspective, habitat associations on the Belvoir are not unique to the surrounding area. Most of the area between Cheyenne and the Laramie Range, and south to the Colorado border, is short grass prairie, as is the Belvoir (see map below). Mountain mahogany communities on the north side of the Belvoir represent the southern extension of a large tract of this habitat type north of I-80.

The small area of big sagebrush on the west side of the Belvoir is part of a large band of this habitat type that runs along the east flank of the Laramie Range. The ponderosa pine community in the southwest portion of the Belvoir is an extension of large tracts of this habitat type in Colorado. From a landscape perspective, the most limited habitat type in the region is irrigated hay meadow.



*The irrigated hay meadow on the east side of Belvoir Ranch is the most limited habitat type in the region.*



*Primary landcover types in the region around the Belvoir Ranch, based on Wyoming GAP Analysis (1996).*



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## Ranch's Ecology

### GENERAL HABITAT DESCRIPTION

The dominant habitat type on the Belvoir Ranch is mixed-grass prairie, which composes 15,727 acres, or 86% of the Ranch. Other habitat types present include xeric shrubs such as mountain mahogany (1,601 acres; 8.7%), irrigated hay fields (537 acres; 2.9%), ponderosa pine (453 acres; 2.5%), and Wyoming big sagebrush (16 acres; 0.09%) (see map on page 14). The Wyoming Gap Analysis project (Wyoming GAP) analyzes the current status of biodiversity within Wyoming, giving land managers and policy makers the tools they need to make better-informed decisions when identifying priority areas for conservation. Wyoming GAP analysis classifies 850 acres of the Belvoir as dry-land crops, however, there are no crops on the Ranch and this area is grassland. Small acreages of riparian areas and wetlands occur, mostly in association with Lone Tree Creek and other streams on the Ranch. The Big Hole is composed of approximately 76% mixed-grass prairie and 24% ponderosa pine (see map on page 14). All major habitat associations on the Belvoir Ranch and Big Hole are common in the region and none are considered unique or sensitive.

### RIPARIAN AREAS

Lone Tree, Goose, Willow, Spottlewold, Spotwood, Duck, and Corlett Creeks all flow through the Ranch and feed a few small reservoirs. All of these streams are ephemeral or intermittent, although Lone Tree Creek apparently has flowing water longer than the other streams, due possibly to enhanced flows through pumped groundwater. Riparian vegetation is most developed along Lone Tree Creek and this is the best riparian habitat on the Ranch. Dominant overstory species along Lone Tree Creek include plains cottonwood, narrowleaf cottonwood, sandbar willow, and yellow willow. Other shrubs include snowberry, mountain maple, mountain alder, Wood's rose, currant, and gooseberry. A wide variety of forbs and grasses occur in the riparian corridor. A plant inventory conducted along portions of Lone Tree Creek as part of a survey for Ute ladies'-tresses orchid and Colorado butterfly plant detected 63 species of plants (Johnson 2004). Riparian areas are not as well developed along other streams on the Ranch which generally lack a tree and shrub layer. For example, plant inventories detected 30 species along Goose Creek and only 12 species along Duck Creek, far fewer than occur along Lone Tree Creek.

Riparian areas generally compose less than 5% of the landscape in the arid West but provide habitat for 80% of the birds that live there. Riparian areas are also important habitats for a host of other wildlife and care should be taken to minimize any impacts, especially along Lone Tree Creek's riparian areas. If new road crossings are constructed across any streams in the project area, a permit from the U.S. Army Corps of Engineers will be required. In addition, new road crossings or other impacts to vegetation along Lone Tree Creek would likely require pre-construction surveys for Preble's meadow jumping mouse, Ute ladies'-tresses orchid, and Colorado butterfly plant.



*Belvoir Ranch's dominant habitat is mixed-grass prairie.*



*Lone cottonwood along an intermittent stream bed.*



*Impacts to wetlands along Lone Tree Creek should be avoided.*

## TRENDS AND KEY ISSUES

- ✦ Dominant habitat type is mixed-grass prairie.
- ✦ Riparian and wetlands areas provide important bird and wildlife habitat.
- ✦ Intermittent creeks flowing through Belvoir Ranch feed small reservoirs.
- ✦ Lone Tree Creek is the Ranch's best riparian habitat.

## WETLANDS

No detailed wetland data is currently available for the Ranch and wetlands have not been mapped at this time. In general, virtually all wetlands on the Belvoir Ranch are associated with the streams; very few are located away from streams and those that are likely are not jurisdictional, meaning they can be impacted without a permit. Avoiding impacts to streams would also result in avoidance of wetland impacts. In general, wetlands are valuable habitats and an attempt to avoid all wetlands should be made when developing plans for roads, trails, facilities and other infrastructure on the Ranch.



Primary landcover types in and around the Belvoir Ranch area, based on Wyoming GAP Analysis (1996).

## Big Game

### OVERVIEW

Belvoir Ranch is located in yearlong range for white-tailed deer (see map below), winter/yearlong and yearlong range for mule deer (see map, top of page 16), and in winter/yearlong range for pronghorn antelope (see map, bottom of page 16). Yearlong range supports a portion of the population on a year-round basis; winter/yearlong range supports animals year-round, but experiences a significant influx of animals from other areas during the winter. There is crucial winter range for both mule deer and pronghorn north of I-80, but no crucial winter range on the Belvoir Ranch. The Wyoming Game and Fish Department considers crucial winter range the most important big game habitat. The lack of crucial winter range on the Belvoir will significantly reduce the potential for any aspects of the management plan to have a significant impact on big game.

The Belvoir Ranch has been managed as a Hunter Management Area by the Wyoming Game and Fish Department (WGFD) since being acquired by the City. In 2006, the WGFD authorized 50 antelope hunters on the ranch for rifle antelope hunting. Deer hunting was limited to archery only, and there was no limit to the number of archery deer hunters allowed on the ranch.



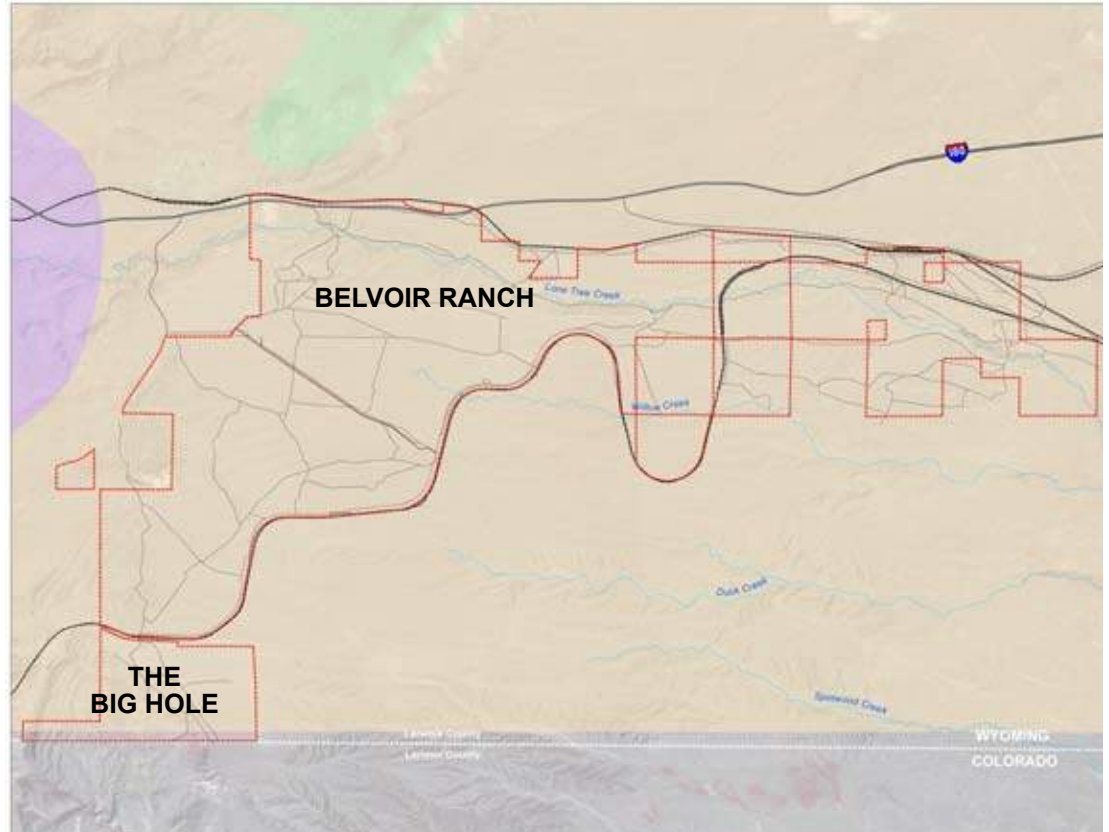
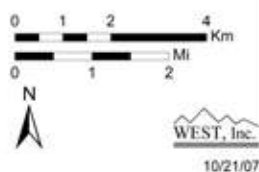
*Antelope on Belvoir Ranch.*

### TRENDS AND KEY ISSUES

- ✦ No critical winter range exists for white-tailed deer, mule deer or pronghorn antelope on Belvoir Ranch.

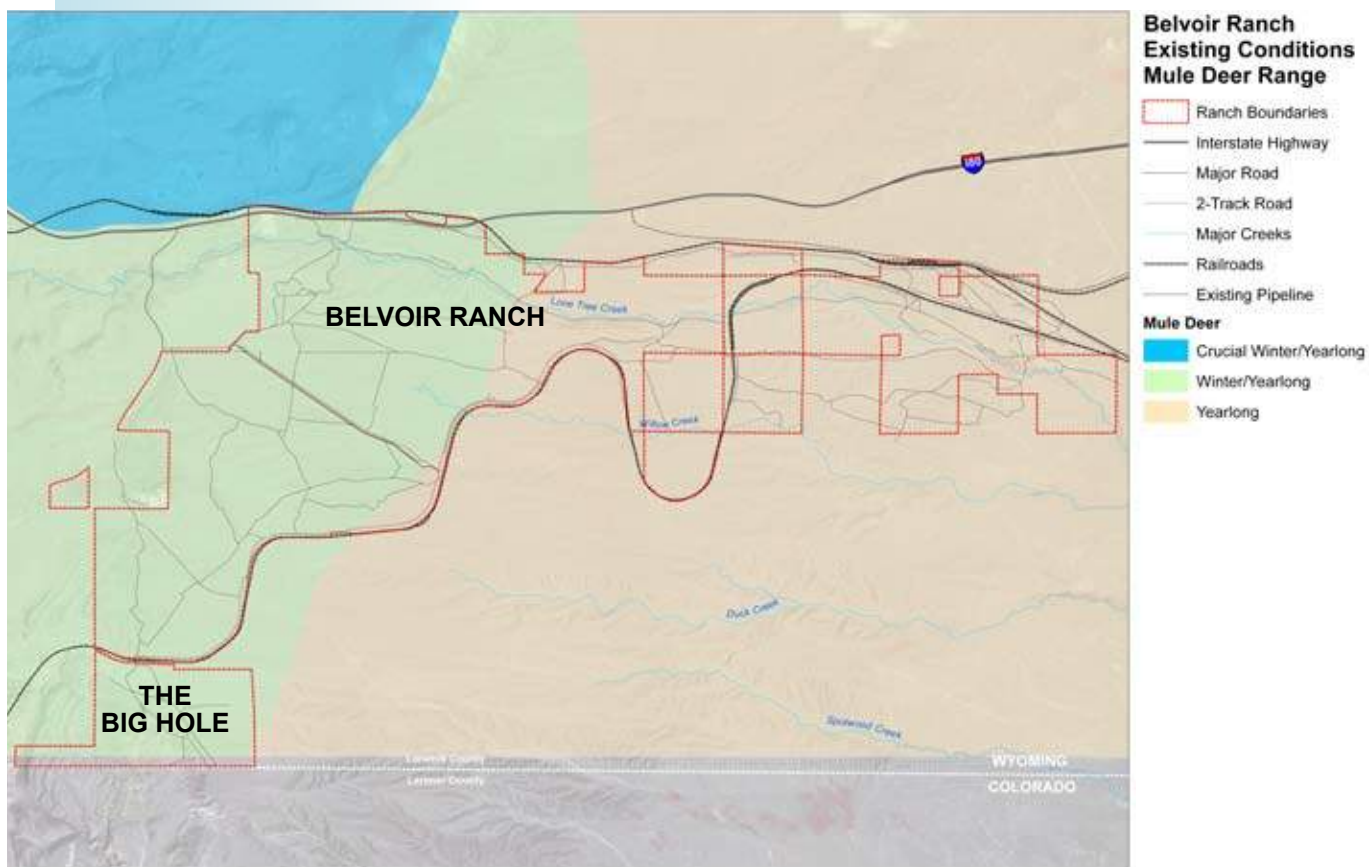
#### Belvoir Ranch Existing Conditions White-tailed Deer Range

- Ranch Boundaries
- Interstate Highway
- Major Road
- 2-Track Road
- Major Creeks
- Railroads
- Existing Pipeline
- White-tailed Deer**
  - Winter/Yearlong
  - Yearlong
  - Spring/Summer/Fall

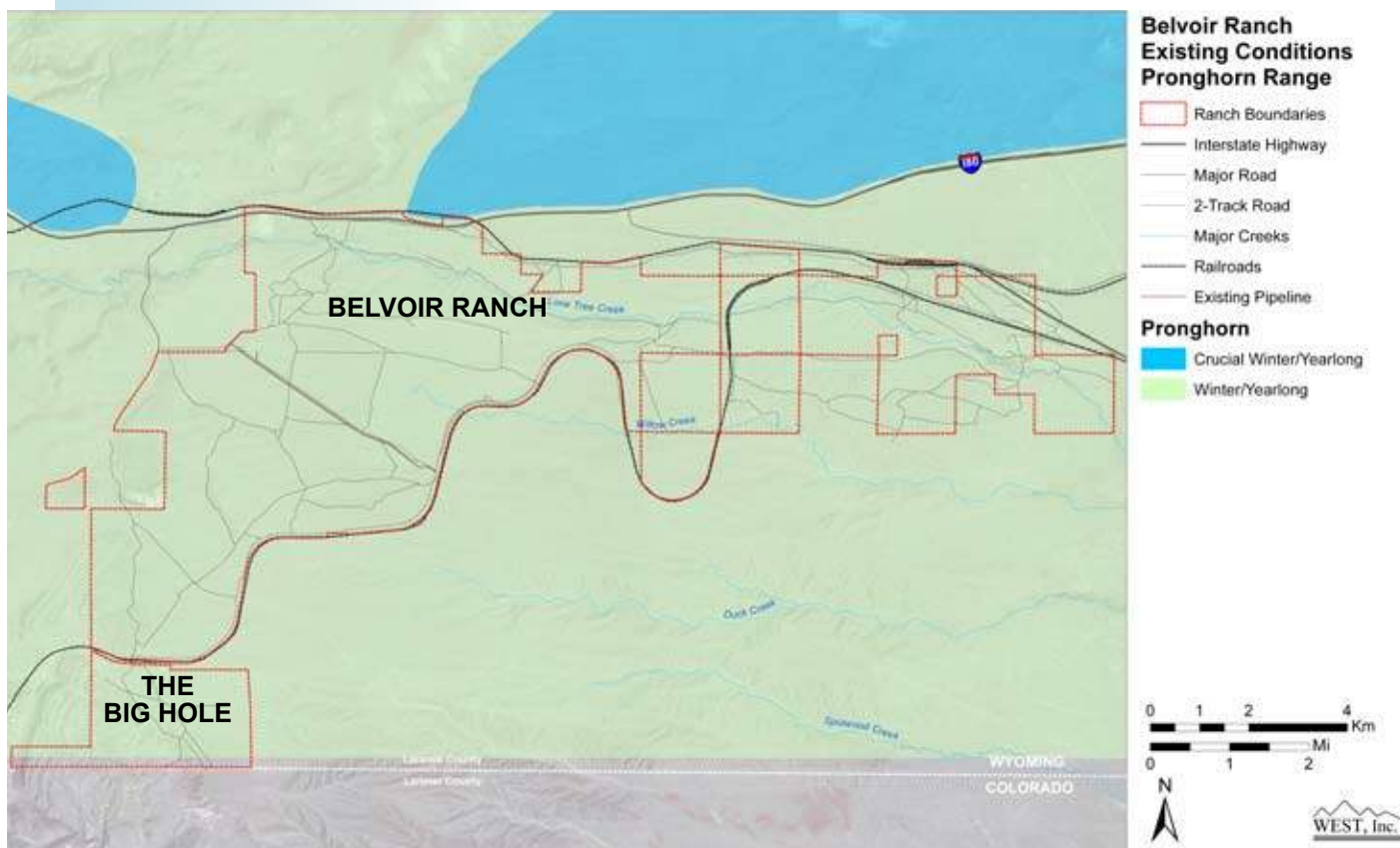


*White-tailed deer range in the Belvoir Ranch area as defined by Wyoming Department of Fish and Game (WGFD) and updated in 2005.*





Mule deer range in the Belvoir Ranch area as defined by WGFD and updated in 2006.



Pronghorn range in the Belvoir Ranch area as defined by WGFD and updated in 2006.



## Fisheries

### OVERVIEW

Lone Tree Creek passes through the northern portion of the Ranch and is classified as a low production trout area by Wyoming Game and Fish Department. No other streams on the Belvoir are considered to be trout streams. Lone Tree Creek historically supported populations of greenback cutthroat trout, a federally threatened species, which is now thought to be extirpated from Wyoming. Due to low water levels this stream experiences in late summer and fall, when portions of it do not contain water, Lone Tree Creek is unlikely to support significant numbers of game or non-game fish. If sufficient water could be obtained, using well water to maintain Lone Tree Creek as a perennial stream would improve habitat for trout and allow for a recreational fishery to be developed on the Ranch.



*Well water could be used to support fish habitat, such as that in this reservoir near the Belvoir Ranch headquarters.*

### TRENDS AND KEY ISSUES

- ★ Lone Tree Creek is unlikely to support large numbers of game or non-game fish.
- ★ A portion of the Ranch's water could be used to support fish habitat.
- ★ A balance of well water and surface water use for wildlife habitat and municipal drinking water should be determined.

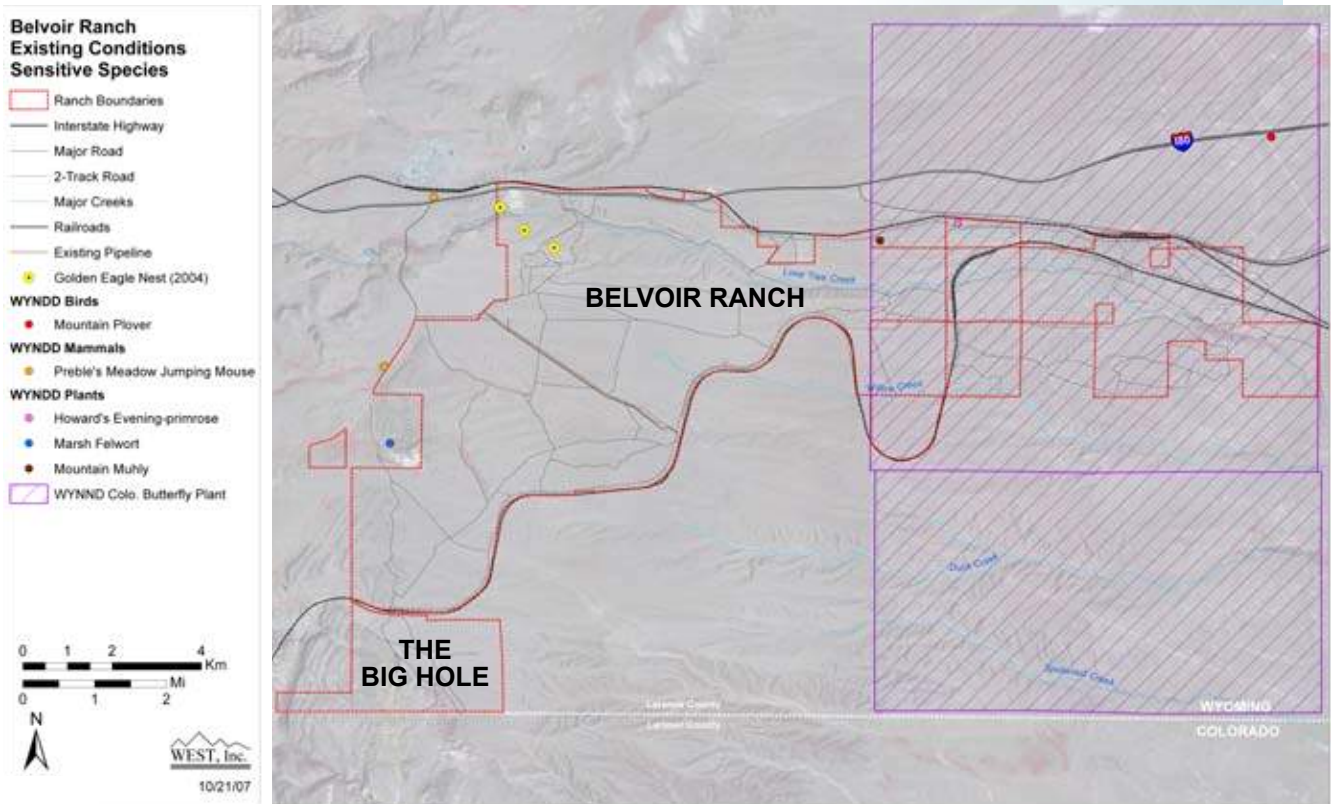


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## Sensitive Species

### THREATENED AND ENDANGERED SPECIES

According to the U.S. Fish & Wildlife Service, the Belvoir Ranch occurs in the potential range of four federally-listed species: black-footed ferret, Preble's meadow jumping mouse, Ute ladies'-tresses orchid, and Colorado butterfly plant.



Sensitive species in and around the Belvoir Ranch area. All observations except for the golden eagle nest are from the Wyoming Natural Diversity Database (WYNDD). The golden eagle nest was recorded as active in 2004 during a raptor nest survey for the Granite Canyon Quarry.

### BLACK-FOOTED FERRET

The black-footed ferret is listed as endangered under the Endangered Species Act (ESA). Black-footed ferrets depend on prairie dog towns for food and shelter; ferrets are rarely found outside of prairie dog colonies and prairie dogs make up to 90% of their diet (Derby and Young 1999). Currently in Wyoming, ferrets are known to exist at the Shirley Basin reintroduction site in Carbon County. No prairie dog towns occur on the Belvoir Ranch; therefore, there is no potential for black-footed ferrets to occur on the Ranch.



*Preble's meadow jumping mouse*

## PREBLE'S MEADOW JUMPING MOUSE

Preble's meadow jumping mouse is listed as threatened under the ESA. Preble's meadow jumping mouse is found in Colorado and southeastern Wyoming and generally occurs in wetlands and riparian areas with shrubs, bushes, trees, and an undergrowth of grasses and forbs. Wyoming Natural Diversity Database (WYNDD) records indicate that Preble's meadow jumping mice were observed or collected in two locations along Harriman Road west of the Belvoir; one near the Harriman Road I-80 interchange approximately 1 mile west of the Ranch in July 2000, and the other immediately adjacent to the Ranch before 1987 (no other documentation available) (see map on page 19). Some habitat suitable for Preble's meadow jumping mouse exists along Lone Tree Creek. Riparian habitat along Lone Tree Creek should be avoided to prevent impacts to this species. If any construction activities occur which may affect Lone Tree Creek (e.g., new road crossings), a trapping survey for Preble's meadow jumping mouse would likely be required to determine presence/absence.



*Utes Ladies'-tresses orchid (photo: USFWS)*

## UTE LADIES'-TRESSES ORCHID

The Ute ladies'-tresses orchid is listed as threatened under the ESA. This orchid grows in wetlands near lakes, springs, or perennial streams between 4,200-7,000 feet in elevation. The species usually occurs in areas with relatively low vegetation (less than 0.5m), and typically in wet meadows or early successional riparian habitats, such as sand bars, with no overstory. Suitable habitat for Ute's ladies'-tresses occurs on the Belvoir Ranch, but no populations are known to occur there. A portion of Lone Tree Creek in Sections 16 and 17 on the Belvoir Ranch was surveyed for the presence of Ute ladies'-tresses on 8 September 2004, as part of the environmental screening conducted for the then proposed access road to a new landfill. No Ute ladies'-tresses orchids were found. If any construction activities occur on the Belvoir that may affect riparian habitat along Lone Tree Creek or other wetlands on the Ranch, surveys for Ute ladies'-tresses would likely be required to document presence or absence.

## COLORADO BUTTERFLY PLANT

The Colorado butterfly plant is listed as threatened under the ESA. This species grows in sub-irrigated soils associated with streams in mixed-grass prairie at elevations between 5800 to 6400 feet. One population of Colorado butterfly plant is known to occur on the Belvoir along Lone Tree Creek (see map on page 19; precise location was not provided by WYNDD). Portions of Lone Tree Creek further east of the Belvoir have been designated critical habitat for this species, but there is no critical habitat on the Belvoir itself. This area should not be developed and presence of these plants should not be made known to the public to prevent damage by collectors or trampling.



## OTHER SENSITIVE PLANT SPECIES

There are three known Wyoming species of special concern that occur in or near the Belvoir Ranch : *Lomatogonium rotatum* (marsh felwort), *Muhlenbergia montana* (mountain muhly), and *Oenothera howardii* (Howard's evening-primrose) (see map on page 19). Marsh felwort is a forb that grows along lakeshores, flooded meadows, and other wetlands with willow thickets or *Carex simulata* wetlands. It occurs at elevations between 7300 and 8960 ft. The flowering period of marsh felwort is in late summer (August-September) and it has a small, whitish to light blue colored flower. Mountain muhly is a bunchgrass that is of high value for grazing livestock, but it is sensitive to overgrazing and trampling. Howard's evening primrose is a perennial forb with a four-petaled yellow flower.

Also, there twenty known Wyoming species of special concern within 4 miles of Belvoir Ranch: *Astragalus tridactylus* (three-fingered milkvetch), *Aletes humilis* (Larimer aletes), *Argyroschisma fendleri* (Fendler cloak-fern), *Bahia dissecta* (dissected bahia), *Bouteloua simplex* (mat grama), *Carex crawei* (Crawe sedge), *Carex oreocharis* (mountain-loving sedge), *Chenopodium watsonii* (Watson goosefoot), *Delphinium ramosum* (mountain larkspur), *Gentiana affinis* var. *bigelovii* (Bigelow's prairie gentian), *Lithospermum multiflorum* (many-flowered gromwell), *Muhlenbergia torreyi* (ring muhly), *Packera pseud aurea* var. *flavula* (streambank groundsel), *Paronychia jamesii* (James nailwort), *Phacelia alba* (white scorpion-weed), *Phacelia denticulata* (Rocky Mountain phacelia), *Selaginella mutica* (blunt-leaf spike-moss), *Selaginella underwoodii* (Underwood's spike-moss), *Silphium integrifolium* var. *laeve* (rosinweed), and *Symphyotrichum porteri* (Porter's aster). Although not protected by law, due to their rareness, the presence of sensitive plants should be taken into consideration when planning the location of trails, roads and other infrastructure on the Ranch to avoid impacts to these species.

The WYNDD contains records for 31 species of birds, 13 species of mammals, 2 species of amphibians and 2 fish species that either have been documented on the Belvoir or within 4 miles of the Belvoir Ranch. Many of these records are historical and do not reflect the current situation. For example, records of the greenback cutthroat trout within the Belvoir Ranch are over 100 years old.

In addition to the Preble's meadow jumping mouse, the only other animal species of concern recorded very near the project area is the mountain plover (*Charadrius montanus*) (see map on page 19). Records from the mid-1960s indicate a potential breeding area for mountain plovers about 1.6 miles north of the east end of the Belvoir Ranch. The mountain plover is a shorebird that breeds in Wyoming where topography is flat and land cover is very short grass (< 4 in) or bare.



Colorado butterfly plant (photo: USFWS)

## TRENDS AND KEY ISSUES

- ★ Colorado butterfly plant, listed as threatened under ESA, is known to occur on Belvoir along Lone Tree Creek.
- ★ Preble's meadow jumping mouse has been identified as occurring along Harriman Road west of the Belvoir Ranch. Suitable habitat for the threatened mouse occurs along Lone Tree Creek.
- ★ Suitable habitat for Ute ladies'-tresses occurs on Belvoir Ranch, however no populations are known to occur there.
- ★ Belvoir is home to many raptor species including a formerly ESA listed golden eagle which nests on Belvoir Ranch.
- ★ There are three known Wyoming species of special concern that occur in or near the Belvoir Ranch.



Bald eagle  
(photo: USFWS)

## BALD EAGLE

The bald eagle was formerly listed as threatened under the ESA was de-listed in July 2007. The bald eagle is currently protected under Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act. Generally, they require areas in the proximity of water for nesting. During winter, areas with abundant, readily available food sources and good roost sites are preferred. Roosts are generally old, large trees where visibility is good and human disturbance is low. In Wyoming, wintering bald eagles are primarily found in open areas near water where they feed on fish and waterfowl. There is no highly suitable nesting or wintering habitat for bald eagles on the Belvoir Ranch. No bald eagles have been recorded on the Ranch in any of the databases searched although there are records for them near the Ranch. Use of the Belvoir by bald eagles is likely limited to the occasional migrant and this species should not affect any aspect of the management plan.



Swainson's Hawk  
(photo: peregrine foundation)

## RAPTORS

The Migratory Bird Treaty Act was enacted to prevent “take” of migratory birds. In addition to actual killing of individual birds, “take” can also mean to harass or disturb migratory birds. The primary concern over “take” of migratory birds in association with the Belvoir master plan is the potential for construction activities to cause nesting raptors to abandon their nests or young. In general, construction activities are not allowed within ½ mile of active raptor nests from mid-February to the end of August, or until the chicks fledge, which is often prior to the end of August. For eagle and ferruginous hawk nests, the suggested buffer is 1 mile. Therefore, it is important to know where active nests are located so that their presence may be taken into account when planning construction activities. The simplest solution is to delay construction until after the birds have completed nesting that year.

A full inventory of nesting raptors has not been conducted and is not necessary at this stage of the planning process, as the situation will likely change over time. Nesting surveys should be conducted immediately before any construction activities. Raptor species that may nest in the vicinity of the project area include northern harrier, sharp-shinned hawk, Cooper’s hawk, Swainson’s hawk, red-tailed hawk, ferruginous hawk, golden eagle, American kestrel, and prairie falcon. As part of a nesting survey for the Granite Canyon Quarry, an active golden eagle nest was documented on the Belvoir in 2004. This nest is in the northwest corner of the Ranch near I-80 (see map on page 19). Trees and rocky outcrops in the northwest part of the Ranch provide the best raptor nesting habitat, but nests may occur in other portions of the project area where deciduous trees such as cottonwoods occur. In addition to construction activities, other human activity may disrupt nesting raptors. Therefore, consideration should be given to avoid placing trails or other infrastructure near active raptor nests, especially the golden eagle nest known to occur on the Ranch.

## SOILS AND GEOLOGY

Soils in the Belvoir Ranch are largely fine- to coarse-loamy soils deposited by alluvial (rivers and stream) and eolian (wind) processes. Several alluvial deposits are characterized as deep; many of the soil types form a shallow or very shallow layer over the underlying bedrock.

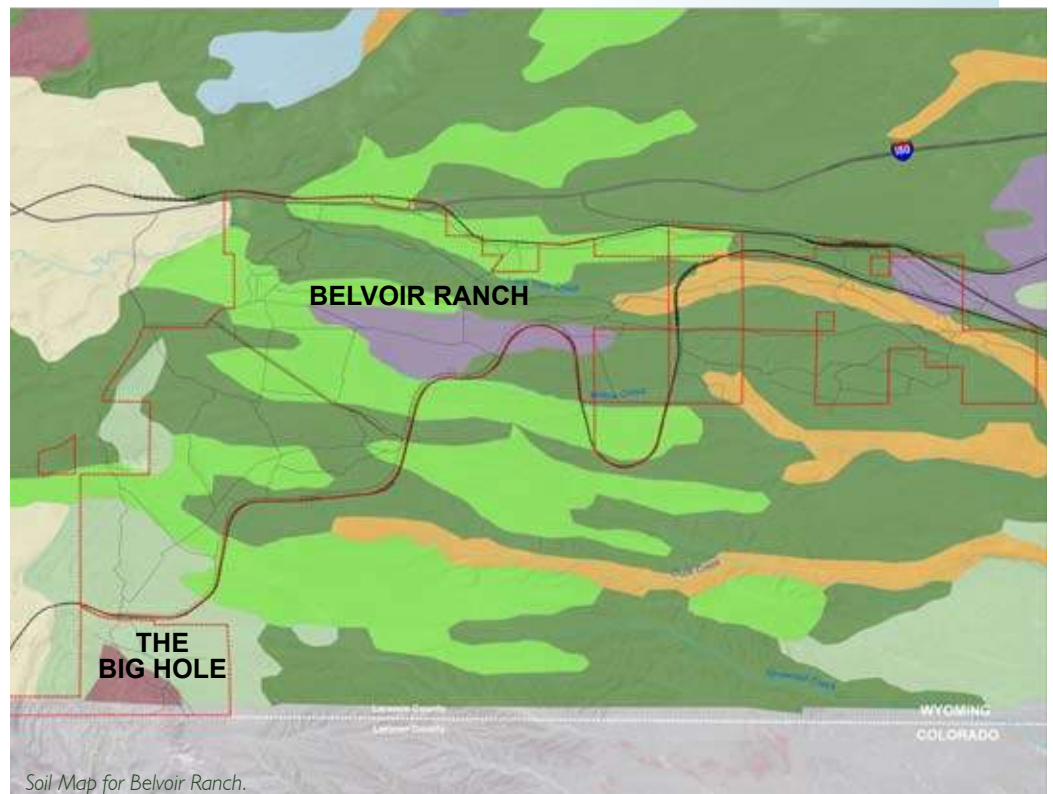
Surface geology reflects the predominant action of water and wind on the landscape. Bench and terrace formations are dissected and eroded. Deposits are of alluvial and eolian origin, and are formed by decomposition of rocks and the effects of landslides. The southern part of the Big Hole area has some exposed bedrock features.

Two soil types dominate the Belvoir Ranch project area: Treon fine sandy loams (44% of the project area) and Merden silty clay loams (37%). Ipson loams (7%), Taluce loams (6%), and Bayard coarse loams (2%) are found in smaller amounts. Four more soil types are found in trace amounts within the project: Ascalon fine loams, Altvan fine loams, Manter coarse loams, and Evanston fine loams.

Treon loams are severely susceptible to water and wind erosion. In contrast, the other main soil type, Merden, is only slightly susceptible to water and wind erosion. All other soil types in the project area exhibit a range of susceptibility to water and wind erosion that falls between that of the Merden and Treon soils. A map of the soils is provided below.



*Alluvial deposits on Belvoir.*



*Soil Map for Belvoir Ranch.*





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## Current Uses

### OVERVIEW

A good catchphrase for Belvoir Ranch is Still the West, because activities that currently take place at the Ranch are typical for those that have historically taken place in the western United States. These include cattle grazing, growing hay, hunting, and energy development. All current uses are shown on the existing conditions map on page 57.

Belvoir Ranch is a 17,000-acre piece of Wyoming history located just southwest of Cheyenne, stretching from west of the city limits to the foothills, from I-80 south to the Colorado border. Originally purchased for municipal water development and a possible landfill site, the Ranch provides the community with abundant possibilities that include energy development and recreational uses.

The Big Hole is just south of Belvoir, which bridges the gap between vast tracts of publicly held land in Colorado and Belvoir Ranch. A management plan developed jointly with Larimer County, Colorado will guide the use of this property.

Development of the Master Plan will be community driven and will identify and create the vision and desired character of the property.

### KEY FACTS

- Belvoir Ranch is currently a working cattle ranch, leased to ranchers who bring their livestock in for summer grazing. At peak times, the Ranch may host around 2,000 cattle.
- The Ranch is divided into 27 distinct fenced pastures that allow the Ranch Manager to manage livestock and prevent overgrazing.
- Well-water is used to irrigate hay pastures near the Ranch Headquarters, which provides fodder for spring and fall cattle grazing. Revenue from cattle grazing generally covers the Ranch's management expenses.
- The Ranch headquarters provides an on-site residence for the Ranch Manager as well as a location to store equipment.
- Hunters are allowed limited access to Belvoir Ranch. The Wyoming Game and Fish Department manages the Ranch as the Lone Tree Creek Hunter Management Area. Allowed activities include archery hunting of antelope or deer, and limited firearm hunting of antelope. Hunting season begins in October with bow hunting and ends in November with rifle hunting. Hunting is on a lottery basis managed by the State of Wyoming.
- The City of Cheyenne Board of Public Utilities is currently studying aquifers under the Ranch with the goal of developing the aquifers as a municipal water source; water will likely be piped from wellheads on the Ranch to the City.



*Cattle corral along Lone Tree Creek*



*Pasture sign at East Starmill pasture.*



*Borie Well #1, one of many artesian wells on the Ranch.*



*Oil and gas wells are found on the eastern end of Belvoir Ranch.*



*Railroad cars passing on Belvoir's southern end.*

## KEY FACTS (CONT.)

- The Ranch contains seasonal and yearlong habitat for a wide variety of wildlife such as antelope, mule deer, elk, many non-game birds, waterfowl, and raptors. No critical winter range exists for white-tailed deer, mule deer or pronghorn antelope on Belvoir Ranch.
- Billboard rental along I-80 provides the City with a small amount of revenue.
- Oil and gas are being pumped in various places on the Ranch with mineral rights owned by several companies – not the City of Cheyenne. The City currently has little control over oil and gas development but would like to develop best management practices for their construction.
- Gas pipelines and a Western Area Power Administration (WAPA) transmission line currently cross through the Ranch.
- Railroad tracks surround the original Belvoir Ranch portion of the site, requiring visitors and cattle alike to enter and progress through the Ranch through several 14 foot culverts that cross under railroad tracks, or at a limited number of on-grade road crossings.

## TRENDS AND KEY ISSUES

(From City of Cheyenne 2004 Parks and Recreation Survey)

- ✦ 51% of those surveyed support recreational uses at Belvoir.
- ✦ Top five facilities residents feel Cheyenne's parks lack are walking trails, open space, natural areas, and areas for events such as concerts.
- ✦ For open space residents are most interested in creeks, lakes and ponds, and also scenic views.



*Corral on Lone Tree Creek.*



## Grazing And Pasture Use

### OVERVIEW

Cattle ranching is a historic use of Belvoir Ranch that continues today. The City of Cheyenne employs an on-site Ranch Manager to oversee grazing activities and to manage the Ranch's land. Although this is seen as an efficient and economic method of ensuring that the entire ranch doesn't become choked with noxious weeds, in some areas noxious weeds remain a problem. In addition to managing cattle on the deeded 18,800 acres, the Manager also oversees grazing on 3,400 acres of land leased from the State of Wyoming. Much of the Ranch is available for grazing, because the dominant habitat type on Belvoir Ranch is mixed-grass prairie. The Ranch is divided into 27 pastures, ranging widely in size from 34 to 2,047 acres. These are shown on the Existing Conditions map on page 57.

### EARLY SEASON GRAZING

In general, cattle are brought onto Belvoir through the Ranch Headquarters, located on the eastern end of the site, which is also known as the East Ranch. Plants in this area are the earliest to break dormancy in the grazing season, which generally begins in late May. In addition, there is a large hay cutting field in this area – known as “The Meadow” – which provides early fodder for cattle. In general, cows are brought onto the Ranch in truckloads of 75 to 78 cows each.

### MID TO LATE-SEASON GRAZING

Cattle are grazed in East Ranch pastures until the prairie within the West Ranch area has matured in mid-summer. The West Ranch is defined as the area west of the Union Pacific Railroad tracks that divide the Ranch from north to south. The cows are then moved between pastures in the West Ranch until the end of the grazing season.

Cows are generally removed from the Ranch in October at the corral near the Atlas Missile Silo area. At this point the cows have gained enough weight – typically 200 pounds over the season – that the number that can be carried in a single truckload has decreased to around 63. During the first two weeks in October, between 12 and 18 trucks leave the Ranch each day along Harriman Road. Future use planning will need to take transportation routes and frequency into account.

In late October, the Meadow provides the only viable pasture areas for a small amount of cattle. These cattle provide organic matter for this area, in the form of manure, which enriches the soil for the following year's crop. The Ranch has begun to augment this with inorganic fertilizer. These cattle are then moved to feed lots.



*Cattle grazing leases currently provide income on the property.*



*Culverts for cattle crossing under the railroad are used to move cattle through the site.*



*Hay cutting meadow near the Ranch house.*

## TRENDS AND KEY ISSUES

- ★ Fencing will be required to separate grazing from other uses.
- ★ Noxious weed management on Belvoir includes aerial and ground spraying with broadleaf herbicides.
- ★ Location of program elements should be designed to minimize the spread of noxious weeds.



*A stock tank in a corral.*



*One of the corrals on Belvoir Ranch.*

## PASTURE MANAGEMENT

Grazing on Belvoir Ranch is managed to ensure that pastures remain healthy and are not overgrazed, while also producing maximum returns. In general, cattle stay on each pasture for one week, and then are moved to another pasture with taller, fresher grass. Additionally, pastures are on a two year rotation, being grazed for two years and then left fallow for one year. The Ranch currently uses a stocking rate of one Animal Unit Month (AUM), or one mature 1,000 pound cow and her suckling calf per 1,000 pounds of dry matter per month. Generally, this means that the number of cattle does not exceed 2,000 at any one time on Belvoir Ranch.

To manage noxious weeds and maximize the amount of forage grass, certain areas of Belvoir Ranch are sprayed with herbicides. Weeds that can be a problem on Belvoir include larkspur, leafy spurge, dalmation toad flax, Canadian thistle, vipers bugloss, and cheat grass. The Ranch spends around \$24,000 annually to aerial or tractor-spray herbicide over 1,200 acres. In addition, the Ranch is partnering with Wyoming Game and Fish to control the one to two-thousand acres of cheat grass around and east of the Atlas Missile Silos. Some areas of the Ranch have been completely emptied of noxious weeds, such as The Meadow. These areas provide prime fodder for cattle, and represent a significant investment in effort and money.

## RANCH MANAGEMENT CONSIDERATIONS

Historically, **herding** cattle was accomplished on horseback, and rope was used to capture cattle. However, herding is now done using Off-Highway Vehicles and tranquilizer dart guns are used to subdue individual cows. Because of this, recreational OHV use could possibly disrupt cattle herds and cattle ranching operations, as the cows now associate the presence of these vehicles with movement between pastures. As a result, the cattle run from the OHV and lose weight which reduces revenue.

Many miles of **fence** must be maintained within the Ranch, and the lack of busy public roads within the Ranch make this activity fairly easy. Moving cows between pastures and grazing areas is relatively simple and the amount of fencing required to manage cows is minimized. Adding a paved road for the landfill through the Ranch would require additional fencing for safety reasons and may result in more complicated movement patterns for cattle herds unless carefully designed.

**Water** for cattle is provided by a network of wells and springs that are then piped to stock tanks that dot the landscape of Belvoir Ranch. This is necessary because much of the Ranch is dry—especially later in the summer. Although some of the wells are artesian, some of them require a gas-powered pump to bring water to the surface.

**Grazing fees** are based on two factors: the time the cattle are kept on the Ranch, and also the amount of weight gained while on the Ranch. Generally, the Ranch collects about \$120,000 annually in grazing fees, which usually covers the yearly expenses to manage the Ranch.

## Water Development

### OVERVIEW

The City of Cheyenne Board of Public Utilities (BOPU) provides the municipal water supply for the City of Cheyenne including some areas outside the City, such as South Cheyenne Water & Sewer District and F.E. Warren AFB. BOPU was a major funder of the Belvoir Ranch purchase, to gain access to groundwater in order to expand the City's water supply and make it less vulnerable to future droughts and impacts caused by climate change.

### CITY'S WATER NEEDS

Production from BOPU's existing municipal water wells—which represents 25% of the current water supply—is declining, most likely because of the region's recent several-year drought. Surface water supplies have also declined, with 2003 reservoir levels dropping below 50% of capacity and exposing the City's vulnerability to extended drought. One of the BOPU's responses to this situation has been to promote reduced demand by adopting a Wise Water Use Plan and comprehensive water conservation program.

However, to meet future population growth needs as well as to make the water supply more drought-resistant, BOPU must expand the municipal water supply. Development of unexplored groundwater resources at Belvoir Ranch will help accomplish both goals, and early tests show groundwater in aquifers beneath the Ranch. BOPU is currently not developing surface water at Belvoir Ranch, because of the limited flow of surface water through the Ranch.

### BELVOIR GROUNDWATER STUDIES

BOPU has conducted several studies at Belvoir Ranch since 2003, and currently has three major hydrogeologic studies of groundwater resources underway. The goal of these studies is to determine the amount of water that can be sustainably withdrawn from the Ranch's aquifers without reducing their capacity to produce water. The results of the current studies could be available in mid-2008, and BOPU will make decisions about how to develop Belvoir's ground water supply.

### WATER CONTAMINATION

Water in the uppermost aquifer on Belvoir Ranch has been contaminated with Trichloroethene (TCE). TCE was a solvent used at the former, F.E. Warren Atlas "D" Missile Site 4 located on the west side of the Belvoir Ranch. The Army Corp of Engineers is currently assessing the extent of the contamination. BOPU will use an appropriate treatment method to accomplish removal of TCE from the water supply prior to pumping it into the municipal water supply.



Monitoring wells are located throughout the Ranch, to help BOPU study how water development is affecting the aquifers.



Kennedy well house. This well is located in the Williams Pasture, on the Ranch's northwest corner.



Artesian test well at Borie Reservoir near Ranch Manager's Complex.



## TRENDS AND KEY ISSUES

- ★ Cheyenne's water demand is projected to grow 60% by 2050, from today's 18,460 acre feet to 29,468 acre feet.
- ★ Belvoir's groundwater could be a drought-resistant water source assisting in meeting summertime peak-demand.
- ★ BOPU's current studies of groundwater pumping and its effects on aquifers underneath Belvoir Ranch should be complete by mid-2008.

## WATER AND RECREATION

BOPU's mission is to “develop, maintain and protect Cheyenne’s water, wastewater and water reclamation resources and assets ensuring that regulatory requirements are met in order to provide the utmost benefit for the community’s investment.” This means that the primary use of water developed on the Ranch will be for water for the City of Cheyenne.

Water will most likely be piped directly from wellheads to a process facility to remove the TCE. This will minimize water evaporation while it travels, and maximize the amount of water provided from the Ranch. No above-ground storage tanks or other forms of above-ground water conveyance are currently planned. However, if a need for water to create or enhance recreation activities is identified during the development of the Belvoir Ranch Master Plan, BOPU could consider redirecting some of the water developed on the Ranch to those uses, so long as the recreational use did not detract from the City goal to develop the water on the Ranch for municipal drinking water needs.



*The Borie Reservoir is currently fed by a BOPU artesian test well (see previous page).*

## Landfill Project

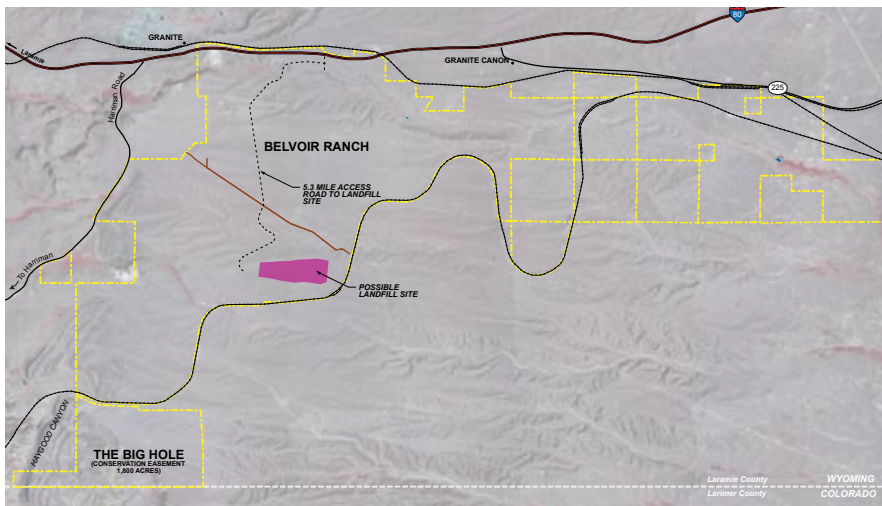
### OVERVIEW

In addition to municipal water exploration, Belvoir Ranch was originally purchased for use as a possible City of Cheyenne landfill site. The City needs a new landfill because the current landfill is projected to be filled to capacity by 2011. At the time the Ranch was purchased, it was the City's best option for a landfill site because it met all regulatory requirements. The property also had a willing seller. Furthermore, Belvoir would provide a good location because the landfill could be located away from a major drainageway.

The proposed location would allow the City to fill the upper reaches of a small drainageway and avoid digging deeply to create the landfill. Most likely, it would blend with the existing land and not be constructed higher than surrounding ridgelines. Additionally, the site would not be visible from many areas including Interstate 80. Proposed access to the landfill would be from the Warren exit off Interstate 80, with a 5.3 mile road from the exit to the landfill. The landfill is expected to utilize up to 600 acres.

Since the Belvoir Ranch purchase, the City has investigated several other options: hauling trash to an existing landfill in Ault, Colorado; creating waste to energy at the existing landfill; or expanding the existing landfill either vertically or laterally. The Wyoming Department of Environmental Quality has given tentative approval for the City to expand its current landfill. The preferred option is to create a waste-to-energy option at the existing landfill site. The conversion of waste to electricity is currently being implemented in 87 cities in the United States.

In early 2005, the City estimated that it would cost \$22.4 million to construct a landfill at Belvoir. The costs include: \$6 million to close the old landfill, \$7 million to build a new landfill, and \$4 million to construct the access road across Belvoir. Because of cost issues, Belvoir is not currently the highest ranked alternative for a landfill site.



*Proposed landfill site*

### TRENDS AND KEY ISSUES

- ★ A nine mile road will have to be constructed to access the landfill site.
- ★ The proposed site is not in a major drainageway and would not be visible from many areas including I-80.
- ★ Landfill Construction Cost Estimate in 2005 include:
  - Closing existing landfill - \$6 million
  - Building new landfill - \$7 million
  - Constructing new road to landfill - \$4 million
  - Total - \$22.4 million

*Proposed landfill site*



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## Utilities

### OVERVIEW

One municipal water transmission line runs through the site for a short distance near the Merrick No. 1 from existing wells just north of the Belvoir Ranch well to the Sherard Water Treatment Facility. Additional transmission lines from wells transport water for livestock use throughout the site.

Oil wells are located on the eastern end of the site. Oil from these wells is transported off site by trucks rather than transmission lines.

Currently, two natural gas, high-pressure, pipelines, run through the project site. These transmission lines run from the corner of the Granite Ranch Subdivision southeasterly to the Union Pacific Railroad right of way. Both pipelines are located in 50-foot easements. One line is owned by Entrega Gas Pipeline and the other is owned by Overland Pass Pipeline; a third high-pressure natural gas pipeline is anticipated in the future. These pipelines are interstate transmission lines used to convey natural gas from locations in southwestern Wyoming to processing and storage in other states.

A Western Area Power Administration (WAPA) overhead transmission line crosses through the project site. This transmission line runs generally east-west near the southwest portion of the Belvoir Ranch.



*Existing WAPA transmission line running east-west on the southwestern half of the Ranch.*



*Natural gas pipeline running through Belvoir Ranch.*



*Existing oil wells on the eastern end of Belvoir Ranch.*



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# Wind Energy Development

## WIND ENERGY POTENTIAL

The wind resource at Belvoir Ranch is classified by the National Renewable Energy Lab as between class 4 and 6 (“good” to “outstanding”) for wind power production. Class 7 (“superb”) is the highest classification. The City of Cheyenne has identified an area that could be leased for wind energy development as shown in the map below. This area was initially chosen because of its close proximity to a Western Area Power Administration transmission line corridor.

Windpower generation facilities would most likely be located on the west side of the Belvoir Ranch where elevations are higher and prominent ridge lines likely have the best wind potential (see map below). This location is close to existent access roads. A golden eagle nest located about 1.6 miles north of the wind generation lease area (see map on page 19, Sensitive Species) may render the northern part of the wind lease area less than ideal for development. The Ranch will continue to be evaluated more in-depth to optimize opportunities to capture wind energy as well as to minimize impacts on scenic viewsheds.

## GENERAL CONSIDERATIONS

Approximately 10 megawatts (MW) can be placed on a section of land. Wind turbines are usually spaced 5 to 10 rotor diameters apart. The spacing criteria allow approximately twelve 750-kilowatt (kW) turbines or six 1.5-MW turbines on a section of land. Developers usually place the turbines as close together as possible to reduce the costs for wire and roads, but they do not want to create wake losses by placing the turbines too close together.

Wind turbines operate within a specific range of wind speeds to both protect the equipment and maximize its usable life. A typical operating sequence is as follows:

When the wind speed reaches the *cut-in speed* of the turbine (usually around 10 mph), the turbine blades will spin up to operating speed, usually around 14 to 29 rpm (varies by turbine model), and start generating electricity. As the wind speed increases, the generator output increases. When the wind speed increases to the *rated wind speed* (usually around 30 to 35 mph), the generator will output its nameplate-rated capacity (i.e. a 750-kW turbine would now output 750 kW). As the wind speed continues to increase, the generator output will remain at the rated capacity (i.e. 750 kW) until the wind reaches the *cut-out speed* (usually around 55 to 65 mph). At this wind speed, the turbine will deploy its tip-brakes and then apply its disk brake, stopping the blades in a few revolutions. It will then rotate itself 90 degrees out of the wind and park itself. If the wind speed drops to a level below the *cut-out speed* for a sufficient length of time, the turbine will point itself back into the wind, release the brake, and resume power production.

A limitation is that electricity from wind power cannot be stored. Supplemental sources are needed for times when turbines are not operating.



Ponnequin Wind Farm south of Cheyenne.

## TRENDS AND KEY ISSUES

- ✦ Wind farms are becoming a common form of energy development in the region.
- ✦ The City of Cheyenne has leased land at its current landfill for a 30 megawatt wind farm. Electricity produced will be sold to Cheyenne Light, Fuel & Power.
- ✦ Colorado State University is planning to develop a wind farm with between 65 and 200 MW of capacity at its 11,000-acre Maxwell Ranch property southwest of Belvoir Ranch.
- ✦ Wind energy provides a hedge against the price of electricity generated using fossil fuels.
- ✦ Belvoir Ranch lies in one of the few outstanding areas in Wyoming for producing wind energy.
- ✦ Transmission line availability will play a key role in deciding whether to develop a wind farm at Belvoir Ranch.



## ECONOMIC BENEFITS

- ★ 20-70 jobs created during construction per 50 MW (less for new projects)
- ★ 3-10 permanent operations/maintenance jobs created per 50 MW
- ★ Contracts for the local construction and service industry

## ENVIRONMENTAL BENEFITS

- ★ Renewable energy source
- ★ Reduced carbon dioxide CO<sub>2</sub> and sulfur dioxide SO<sub>2</sub> emissions
- ★ Uses less land than other energy sources

## WINDPOWER ECONOMICS

To develop a wind farm, approximately \$1.5 to \$20 million of investment is needed per MW of installed capacity. A 1.5-MW wind turbine will produce approximately 4 to 5 million kWh per year—enough to power about 500 homes. At \$0.06/kWh, the turbine would earn \$275,000 per year in gross revenue. To take advantage of economies of scale, wind power facilities should be in excess of 20 MW—or two sections of land.

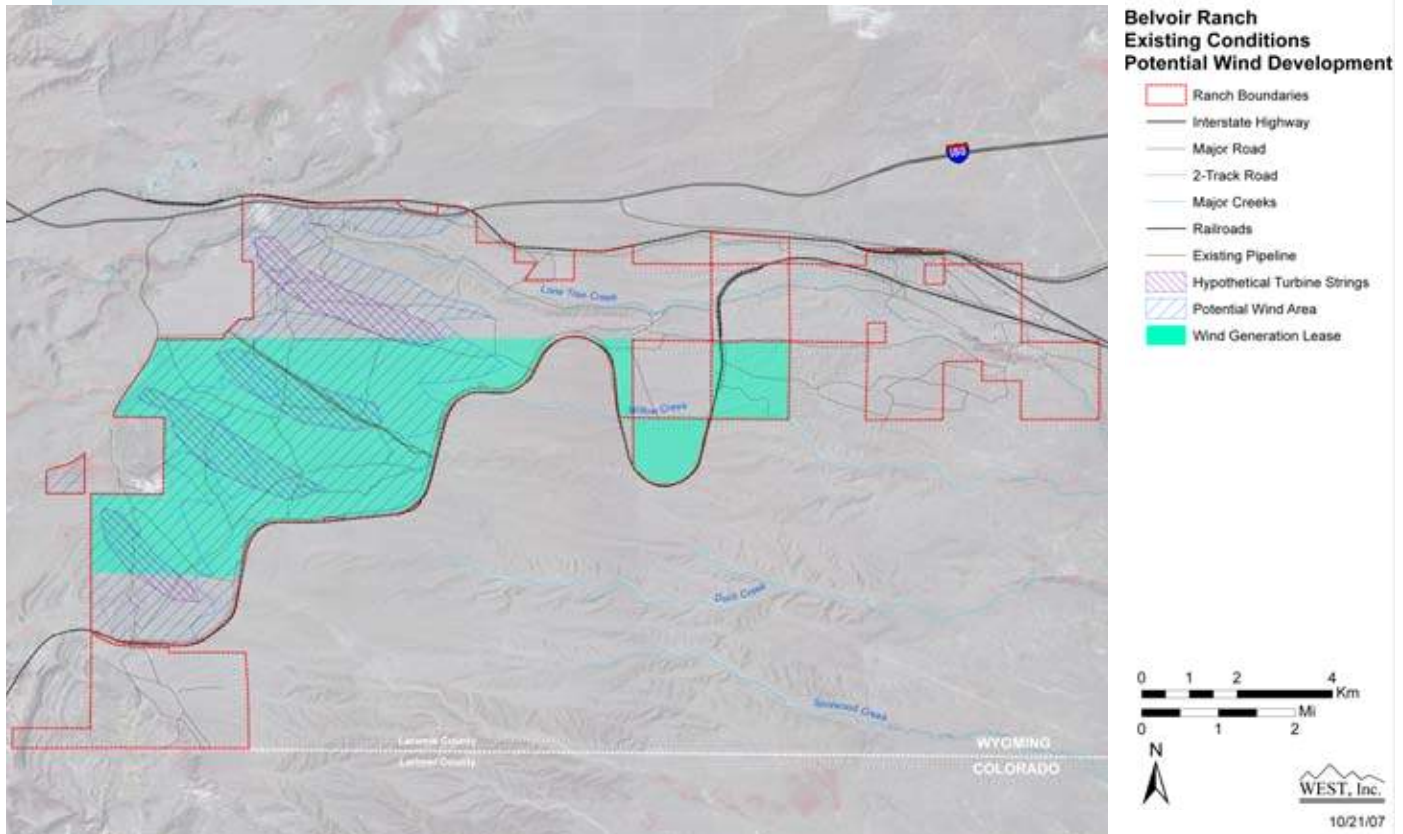
The City's recent lease agreement for a wind farm at the City landfill is expected to generate \$7,000 to \$14,000 per year per turbine. Larger 2.1MW turbines are planned.

Wind farms are usually financed and owned by private investors, and built on leased land. Based on wind projects in southern Minnesota and northern Iowa, landowners can expect to receive annual land-lease payments ranging from \$2,000 to more than \$4,000 per turbine. The payments typically represent from 2% to 4% of the annual gross revenue of the turbine.

Sources:

U.S. Department of Energy, Wind Powering America program ([www.windpoweringamerica.gov](http://www.windpoweringamerica.gov)).

Raabe, Steve. "CSU Planning Its Own Wind Farm." *Denver Post* 29 Mar. 2007. Business Section.



Potential areas for wind power development in the Belvoir Ranch based on areas with highest elevation and topography where wind potential is likely to be the highest.

## Environmental Contaminants

### TRICHLOROETHYLENE

The primary environmental contaminant known to occur on the Belvoir Ranch is trichloroethylene (TCE). TCE is a colorless liquid with a somewhat sweet odor and a sweet, burning taste. It was used mainly as a solvent at the missile sites and is believed to be the source of the contamination on Belvoir Ranch. TCE can remain in ground water for long periods, and the TCE currently on the Belvoir is limited to the groundwater. TCE quickly evaporates from surface water, and does not build up significantly in plants or animals. There is little hazard for recreational users of the Belvoir to be affected by TCE. If groundwater facilities are developed, for instance at a campground, the water would need to be tested and treated to make sure that TCE is removed. Other sources of surface contamination may be present due to spills along the railroad track or spills or leaks near oil production facilities. These areas will not likely be accessible to the public which should minimize the potential for concern.

At this time, no other environmental contaminants are known within Belvoir Ranch, though there is some possibility of the presence of other contaminants due to the historical presence of missile silos, railroads, and interstate trucking activities in the area.



*Missile silo operations may have been the source of TCE contamination at Belvoir Ranch.*



*The Army Corps of Engineers has drilled monitoring wells in an effort to map the TCE groundwater plume at Belvoir.*

### TRENDS AND KEY ISSUES

- ✦ TCE quickly evaporates from surface water, so it is commonly found as a vapor in the air.
- ✦ Trichloroethylene may stick to particles in ground water, eventually settling in the bottom sediment where it may remain for a long time.
- ✦ Common contamination from TCE includes breathing, drinking, and skin contact.



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## Regional Land Use

### OVERVIEW

Belvoir Ranch is surrounded mainly by private land and several parcels of State of Wyoming land that is leased for grazing. In addition, there are large tracts of publicly owned open space to the south, the Medicine Bow National Forest to the northwest, and Curt Gowdy State Park to the north (see regional context map on page 55). The City of Cheyenne is the largest population center in the area, with a 2000 population of 74,160 people in 27,785 households. However, the Cheyenne area is growing rapidly and could gain up to 59,000 new people by 2030.

Land surrounding Belvoir Ranch has an agricultural character, and is predominantly used for grazing (see land ownership map on page 58). However, population growth is resulting in the area's agricultural lands to be converted to subdivisions, which fragments these lands and their scenic views. Spillover from Colorado's front-range development could increase population growth pressures in the region, and speed land conversions. Without the scenic views, agricultural land, and wildlife habitat that open spaces provide, the current quality of life in Wyoming could decline (as identified in the 2001 Laramie County Comprehensive Plan, page 50).

### LAND USE CONSIDERATIONS

- Much of the land surrounding Belvoir Ranch is held in large ownerships, meaning parcels greater than 640 acres. These larger land tracts are less likely to be subdivided into rural residential subdivisions as long as their ranch operations remain viable.
- Land uses preferred by Laramie County around Belvoir Ranch are "Very Low Density Rural/Agricultural," and include ranching, farming, residential lots greater than 35 acres, agricultural commercial, agricultural industrial, parks/recreation/open space and schools.
- A Rural Center has been identified by Laramie County at Harriman Road and I-80. This area will likely have limited convenience commercial and public services to serve the immediate residents, including farmers and ranchers. Often these centers have a gas station and limited grocery services.

### WIND FARMS

Wind farms are becoming more common in the region around Cheyenne, and are a product of the region's reliable winds. Turbines of the Ponnequin Wind Farm, located just south of the Wyoming border, can be seen from Belvoir Ranch. Considered a medium-size farm, this 1,400-acre Xcel Energy-owned facility generates up to 30 megawatts of electricity from 44 wind turbines.

More recently, the City of Cheyenne has leased land at its landfill on Happy Jack Road to Tierra Energy. The company will install wind turbines that produce up to 30 megawatts of electricity. The facility is planned to be operational in 2008, selling its power to Cheyenne Light, Fuel & Power.



*Haygood Canyon is located west of Belvoir with very low density rural/agricultural use.*



*View of the Ranch compound in the foreground and Rocky Mountain National Park in the distance.*



*View of Ponnequin Wind Farm from Belvoir Ranch.*



Vedauwoo located northwest of Belvoir Ranch  
(photo: Vedauwoo.org)



Curt Gowdy State Park located north of  
Belvoir Ranch

## PUBLIC LAND OWNERSHIP

### Larimer County Open Space (Colorado)

Just to the south of the Belvoir Ranch and The Big Hole is an area collectively known as the Laramie Foothills, where several large open space purchases have been made to protect more than 55,000 acres of ecologically and culturally significant landscapes. The Red Mountain Open Space and Soapstone Prairie Natural Area are contiguous to The Big Hole. Both properties are anticipated to open to the public in mid-2009, with management plans under development through 2007.

### Curt Gowdy State Park

Six miles north of Belvoir Ranch is Curt Gowdy State Park, which features a richly varied landscape centered around Granite and Crystal reservoirs. The park includes Hynds Lodge, a National Register listed building that is open to groups on a reservation basis. It also includes an amphitheater available for concerts, theater and many other cultural activities. Both reservoirs provide sport fishing—including boat fishing—and are stocked by the Wyoming Game and Fish Department. The Park also provides drinking water and a dump station for recreational vehicles from May 1 to October 31.

### Medicine Bow National Forest

Northwest of Belvoir Ranch is the 55,000 acre Pole Mountain district of the Medicine Bow National Forest. This forest provides year-round recreation opportunities for thousands of people, as well as habitat for a variety of wildlife. Recreation uses include OHV use on designated Forest Service roads, picnicking, dispersed camping, hunting, fishing, rock climbing, horseback-riding, mountain biking, hiking, cross-country skiing, and snowshoeing.

Developed facilities include campgrounds, individual and group picnic areas, and a gazebo for picnics/weddings. Vedauwoo is a popular rock climbing site within the forest and includes a day-use picnic area and an overnight campground. Pole Mountain is the eastern-most unit of the 2.9 million acre Medicine Bow-Routt National Forest, occupying north central Colorado to central Wyoming.

### Arapaho and Roosevelt National Forests and Pawnee National Grassland (ARP)

The ARP encompasses 1.5 million acres in north central Colorado, and includes short grass prairie east of I-25. The ARP extends over a wide range of terrain, with many types of motorized and non-motorized recreational uses.

### Rocky Mountain National Park

Rocky Mountain National Park provides a potential, but distant, regional connection for trails that originate at Belvoir Ranch. The Park is 80 miles (by vehicle) southwest of Cheyenne. Recreation resources include five drive-in campgrounds, over 200 backcountry campsites, 359 miles of trails, 150 lakes, and 450 miles of streams. Popular activities include biking, picnicking, horseback riding, hiking, backpacking, fishing, climbing and mountaineering, snowshoeing, cross country skiing, bird-watching, wildlife-viewing and ranger-led programs.

## TRENDS AND KEY ISSUES

- ★ The area's population growth is projected to increase by 59,000 by the year 2030.
- ★ A Rural Center was identified in the 2001 Laramie County Comprehensive Plan at Harriman Road and I-80, where a gas station and convenience store may serve residents.
- ★ Wind farms are becoming a common form of energy development in Wyoming.

See Related Maps:

- ★ Regional Open Space
- ★ Regional Context

## Railroads

### HISTORY

In 1869, the railroad across the now Belvoir property was built as part of the country's first Transcontinental Railroad - a modern alternative to wagon trains for westward expansion from the Eastern United States to California. Sherman was the original high point on the transcontinental line at 8,247 feet above sea level. The climb between Cheyenne and Laramie is thus known as Sherman Hill, increasing in elevation 2,201 feet over 32 miles.

Today, three tracks cover this area as part of the Laramie Subdivision of Union Pacific Railroad (UPRR). Main Lines 1 and 2 parallel Interstate 80 across the northern edge of the Belvoir Ranch. Track 3, built in 1953 and located as much as seven miles to the south, is used primarily by westbound trains carrying heavier loads. This "Three Track" forms the southern boundary of the Ranch property, with The Big Hole located south of the tracks.

### SITE IMPACTS

As it crosses the Ranch properties, the UPRR impacts the movement of animals, vehicles and people. Crossing opportunities and constraints for the two rail alignments are summarized as follows:

	Number of Road/Railroad Crossings on Belvoir Ranch		
	Overpasses	Tunnels/Culverts	At-Grade
Main Line 1&2	1	0	2
Three Track	0	9 (+2 closed)	3

In general, the policy of the railroad and Department of Transportation is to try and minimize the number of at-grade crossings in favor of tunnels and bridges that eliminate potential conflicts between users.



A Union Pacific train as it crosses Belvoir Ranch.

### Union Pacific Railroad (UPRR) Facts at a Glance

- ★ The Transcontinental Railroad, built in the 1860's to link the railway network of the Eastern United States with California, played a key role in the history of Cheyenne, the F. E. Warren Air Force Base and the Belvoir Ranch.
- ★ The Union Pacific has played such a large part in the development of Wyoming that many citizens refer to the railroad as "Uncle Pete."
- ★ Today, Union Pacific's transcontinental main line across southern Wyoming hosts 60-90 trains a day.
- ★ UPRR hauls more coal than any other commodity - much to and from Wyoming's Powder River Basin, the single largest source of coal mined in the U.S.
- ★ UPRR also moves soda ash, mined in the Green River area, to domestic and international markets for use in making glass, paint and other products.





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## Trails

### EXISTING TRAIL TYPES

Several types of paths can be found on the Ranch. Some offer potential for future recreational use; others will not be sustainable with increased traffic, or they may create conflicts with ranch operations if open for public access. Locations and types of trails forming the existing circulation network are mapped on page 59.

- **Game Trails** are routes that animals have used over the years to provide access to water and short cuts across the land. Many follow natural features like Lone Tree Creek and are logical corridors for formalized trail designation near points of interest on the Ranch.

Others that traverse steep slopes and follow the fall line (the most direct path down a hillside) will need to be rerouted to better follow the contour of the landscape and minimize potential water erosion impacts that will come with increased foot and hoof traffic.

- **The Twin Mountain Wagon Road** is a historic remnant of the route homesteading wagon trains followed from Cheyenne westward. This barely visible trail would require and offer opportunity for historical interpretative signing along the route.

- **Firebreaks** are cuts in the land plowed by City crews to reduce danger of fire sparked by passing trains. They are located immediately parallel to the Union Pacific right-of-way and often cut across steep grades, thus are not suitable for development as recreational facilities.

- **“Two Tracks”** represent internal roads used by the Ranch to access the various pastures and move cattle between areas. Infrequent vehicle use on these routes creates two “tracks” of limited vegetative growth that can be seen from a distance.

These facilities feel like trails traversing the landscape, but gates located between pastures must remain closed when cattle are grazing. If opened up to hikers, bikers or equestrians, the existing “two track” circulation system will need to remain available for shared use by ranch vehicles for land management and cattle operations. Also, if providing public access across the Ranch a combination of gates and cattle guards may be needed.

- **Graded Roads** are the most frequently used internal circulation routes by management vehicles. Unpaved, but often graded and surfaced with crushed rock, some segments of these roads may warrant a parallel trail or shoulder provided for non-motorized use.

In general, walking or riding on these facilities will not provide users with the full sense of an Old West experience out on the open range. The Belvoir Ranch Master Plan will look further into the feasibility of using these roads for sight-seeing or keeping them restricted to ranch and City vehicles only.



*Example of game trailing.*



*A firebreak plowed down a steep grade parallel to the Union Pacific Railroad.*



*Typical Belvoir Ranch “two-track” through gate between pastures.*



*Graded ranch road for vehicular use.*



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## Roadways

### HISTORY

Following a similar route as the Transcontinental Railroad across Wyoming, the Lincoln Highway brought the nation's first transcontinental roadway through Cheyenne and across Belvoir Ranch. Today, Otto Road and portions of Interstate 80 follow the route of the original historic highway. Large ranch tracts comprise much of the surrounding rural Wyoming landscape, with few local roadways intersecting this primary east/west corridor.



A view west on Otto Road, which extends into Cheyenne and turns into W. Lincolnway

### SITE ACCESS

I-80 creates a barrier across the northern edge of Belvoir Ranch, with only the Warren Interchange providing the potential for direct access into the site. In general, vehicular entry to Belvoir Ranch is limited to six points, as identified on the Transportation Map on page 59 and described following:

- **#1: Borie Fields** (Section 23) - Accessible off of Otto Road, which has full interchange at I-80. The overpass over the main UP line was built as private access for Warren Livestock ranch/oil access and would need to be retrofitted or replaced if opened for general public use.
- **#2: Borie** (Section 15) - Accessible off of Otto Road, with full interchange at I-80. At-grade railroad crossing with up to six tracks to cross in this location.
- **#3: Warren Exit** (Section 15/16) - Full interchange off I-80. Truck parking provided on north side of I-80; no development (roads or other) present on south side of the interchange.
- **#4: Missile Site** (Section 19) - Paved drive on ranch lands to missile site. Accessible off of Harriman Road, which has full interchange at I-80.
- **#5: Rock Quarry** (Section 36) - Ranch road accessible off of Harriman Road, which has full interchange at I-80, will require easement across state property.
- **#6: Haygood Canyon** (Section 14) - Gravel road access through private property to Harriman Road.
- **Additional railroad culverts** (southern edge) - Several internal graded and "two-track" roads also provide access to cross onto adjacent private lands to the south of Belvoir Ranch using culverts under the third UPRR line. However, the nearest public road to the south is the Soapstone Ranch Road near the Wyoming/Colorado state line, accessible from the I-25 Terry Ranch Road exit to the I-25 Service Road.

### Roadway Facts at a Glance

- ★ **I-80:** A federal interstate highway carrying 27,500 vehicles per day. Former route of U.S. 30 and the Lincoln Highway, which was America's first transcontinental route for automobile travel.
- ★ **Otto Road:** State Highway 225 carries approximately 1,500 vehicles per day. The route has paved shoulders from Cheyenne to the nitrate plant, making it the most logical route for experienced (type A) road bicyclists to use to access Belvoir Ranch.
- ★ **Harriman Road:** Wyoming State Highway 218, a two-lane paved road carrying less than 1,000 vehicles per day, with limited access in winter.
- ★ **Missile Base Access:** Paved roads on site built by the Air Force to access its missile silos.



Existing Borie Fields access bridge over the UPRR Overland Route.



Example road/trail culvert under the UPRR Three Track.



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## Connected Open Space

### THE BIG HOLE

Traveling southwest across the rolling mixed-grass prairie found on the Ranch, one arrives at a large depression in the landscape. Appropriately named The Big Hole, this landform was created when loamy soils eroded to form a basin of exposed residuum, bedrock and glaciated bedrock.

With its panoramic views and vividly colored canyon walls, the Big Hole is a unique open space destination that will be sought out by recreational users of the Ranch and surrounding properties. The 1,800-acre property directly links Belvoir Ranch with significant open space tracts in Colorado, providing opportunities to create a regional trail network. Although Colorado owns the bottom and South Rim of the Big Hole, the property is part of a larger ecological system that knows no boundaries and will thus require coordinated planning and management with multiple agencies in Colorado.

In 2005, the Wyoming Legislature passed the Uniform Conservation Easement Act (UCEA). One of the first properties to take advantage of the UCEA in Wyoming, the Big Hole is permanently protected from development by conservation easement — a restriction placed on specified land uses to protect natural, productive or cultural resources.

### The Big Hole

- ★ The Big Hole is a unique land formation that drops approximately 400 feet in elevation from rim to streambed, located just north of the Wyoming/Colorado border.
- ★ Purchased by City of Cheyenne in 2005 for \$525,000 from The Nature Conservancy.
- ★ Includes 1,000 acres of upland pasture and 800 acres of the basin rim.
- ★ The Big Hole will be preserved by one of the first conservation easements under the Wyoming enabling legislation of 2005.



*Panoramic view of The Big Hole*

The conservation easement for the Big Hole states that rights to change use, subdivide, or develop the property are restricted. Items expressly prohibited in the easement include: public vehicular access, the construction of roads or vehicle trails, the establishment of a landfill, and the construction or placement of any buildings or wind-powered electricity generators. Non-motorized, passive recreational activities including hiking, wildlife viewing, horseback riding, cross-country skiing, biking, fishing, and hunting are consistent with the Easement as long as they are in accordance with stated Conservation Values.

- ★ Conservation easements allow passive recreational opportunities while protecting fragile ecosystems by keeping the property in its natural state with no development permitted.



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## Connected Open Space

### THE REGIONAL PICTURE

Just to the south of the Belvoir Ranch and Big Hole is an area collectively known as the Laramie Foothills, where several large open space purchases have been made to protect more than 55,000 acres of ecologically and culturally magnificent landscapes.

As illustrated on the following page, several large tracts have been acquired through the Mountains to Plains Project — a collaborative land protection effort between willing landowners, Larimer County Open Lands Program, the City of Fort Collins Natural Areas Program, The Nature Conservancy, Legacy Land Trust and Great Outdoors Colorado.

The majority of this land was purchased for landscape-scale ecological preservation. Public access in Colorado will be limited to the two northernmost properties — Red Mountain Open Space and the Soapstone Prairie Natural Area. These two areas are located contiguous to The Big Hole. Both properties are anticipated to open to the public in mid-2009, with management plans under development through 2007.

Potential connections in Wyoming include Curt Gowdy State Park and Medicine Bow National Forest, both located northwest of Belvoir Ranch. Medicine Bow and Curt Gowdy are both popular regional mountain biking destinations, and motorized use is allowed in designated areas of Medicine Bow.

The Belvoir Ranch and Big Hole master planning process presents the opportunity to coordinate trail development across multiple areas to ensure connections and access to regional destinations. Draft routing of the northern portion of trail systems proposed for both of the Colorado properties are shown on the transportation map on page 59. Preliminary planning has not yet identified which types of trail user groups will be accommodated.

*Source: City of Fort Collins Natural Areas Program and Larimer County Open Lands Program*

### Red Mountain Open Space

- ✦ A 13,448-acre open space tract to the immediate south of Belvoir Ranch, extending to 15 miles north of Fort Collins.
- ✦ Owned and managed by Larimer County, CO. Public access is anticipated in 2009.

### Soapstone Prairie

- ✦ Encompasses 18,721 acres of open space at the Colorado border, immediately east of the Red Mountain Open Space.
- ✦ A management plan for the property is currently under development by the City of Fort Collins Natural Areas Program.



Medicine Bow National Forest



Soapstone Prairie Natural Area

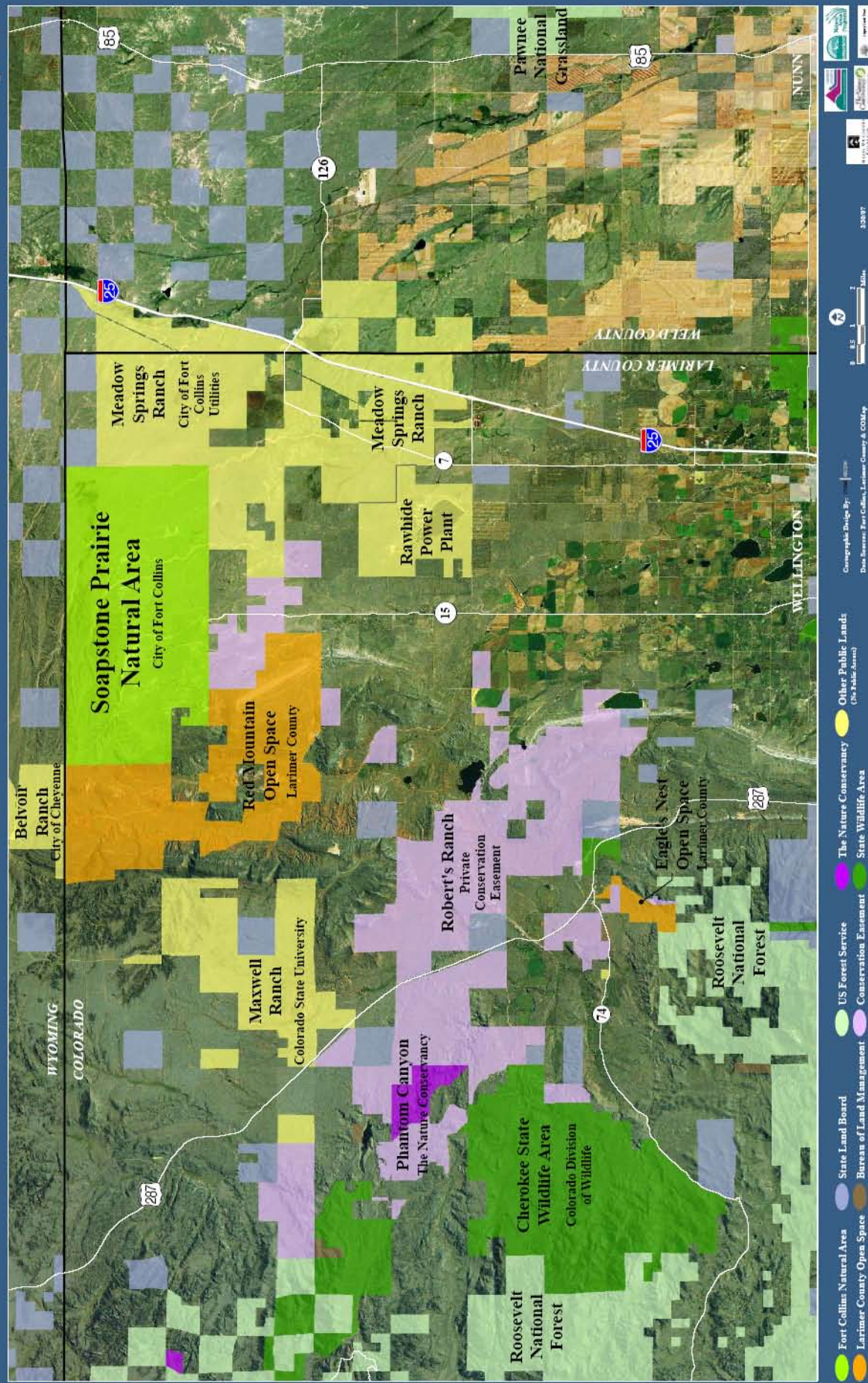


Red Mountain Open Space



# The Laramie Foothills

## Mountains to Plains Project



Source: City of Fort Collins Natural Areas Program and Larimer County Open Lands Program



## Connected Open Space

### GREATER CHEYENNE GREENWAY

Making additional connections northeast of Belvoir Ranch to the Greater Cheyenne Greenway system may further expand the potential to create a large, interconnected regional trail network. This existing 21-mile trail network consists of ten-foot wide concrete paths with two-foot shoulders on either side to accommodate a variety of recreational uses including walking, biking, skating, wheelchair cruising and running.

The Cheyenne City limits are located approximately 5.5 miles to the northeast of the Belvoir Ranch property. Three potential routes are being explored to make this connection. These are depicted on the Greater Cheyenne Greenway map on page 52 and summarized in the following:

- **The Crow Creek Greenway Extension**, which is currently in the planning stages from MLK Park to Freedom Elementary. Connection south from Happy Jack Road will be needed, most likely along Round Top Road south to Otto Road.
- **On-Street Bike Route** proposed along W. Lincolnway with a segment of shared use trail to be constructed on the northside of the road to connect to the terminus of the existing Crow Creek Greenway at Martin Luther King Park. Bicycle accommodation would need to be continued west on Otto Road - most likely as a paved shoulder facility or parallel bike path.
- **A Proposed Clear Creek Greenway** to be a new pathway to head west from Clear Creek Park through the I-80/I-25 interchange and run along the south side of Interstate 80.

As planning moves forward for the Belvoir Ranch Master Plan, each of these routes and other potential alternatives will be more fully explored to link with proposed trails on site. Likewise, different types of trail users and their needs will also be considered when exploring potential regional linkages. Issues warranting specific attention include:

- Transitions between different trail surfaces (e.g. concrete path vs. natural surface trail)
- Most appropriate facility type (on-road vs. designated path) for connections based on distance, traffic volumes, and potential users
- Restriction on travel modes - i.e. horses.
- Careful planning of so trails don't deadend

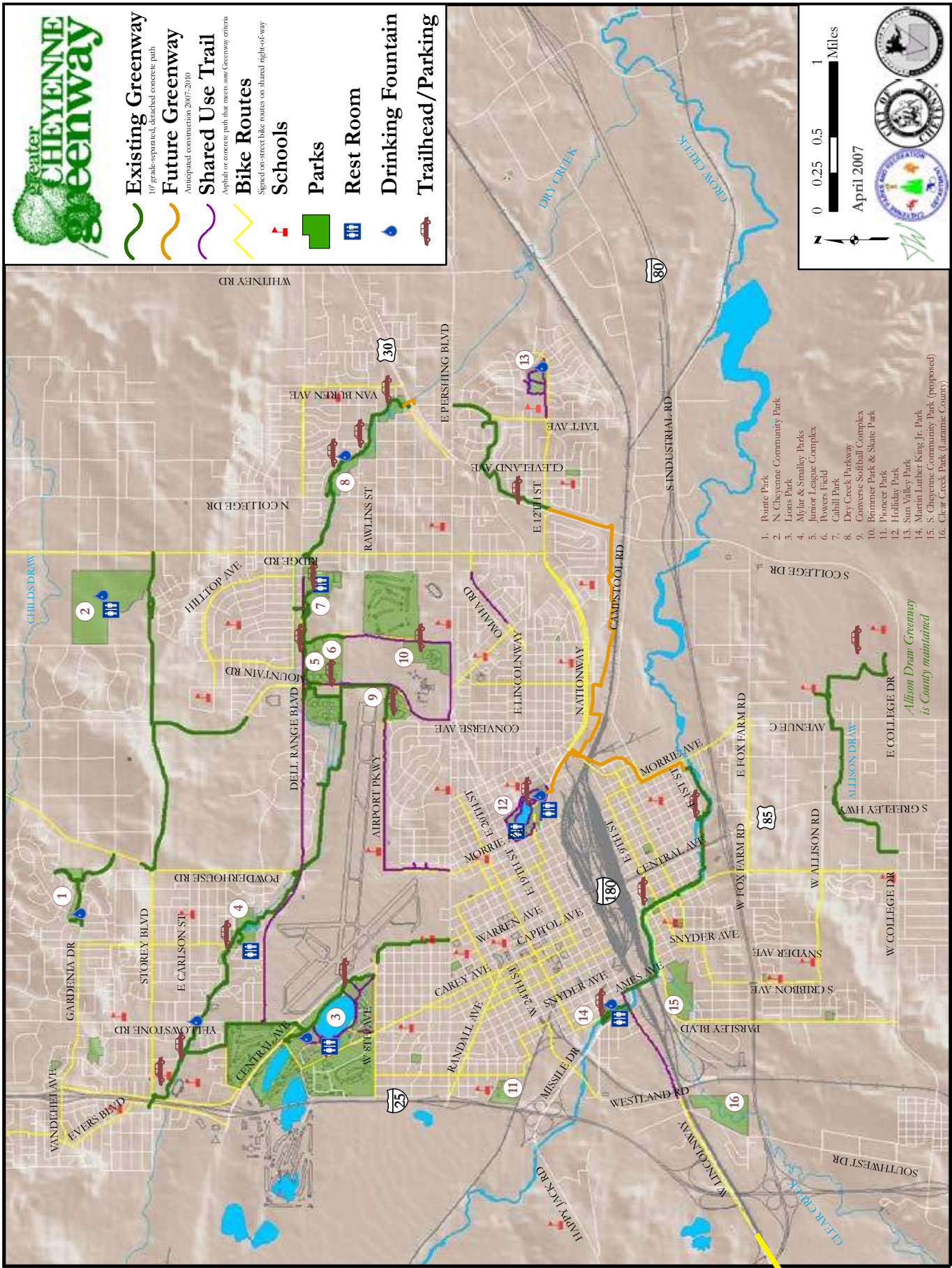


### Greenway System Facts

- ✦ A 21-mile system of accessible concrete trails that connects parks and neighborhoods throughout the city.
- ✦ Begun in 1990 by a grassroots group called the Crow Creek Greenway Committee.
- ✦ In 1996, as a direct result of the greenway, Cheyenne was named a "Trail Town USA" by the National Park Service and the American Hiking Society.



- ✦ Today, the greenway is funded through the 1991 Capital Facilities Tax and 2003 Special Purpose Tax, with supplemental support from federal, state and private grants, donations and local fund-raising efforts.



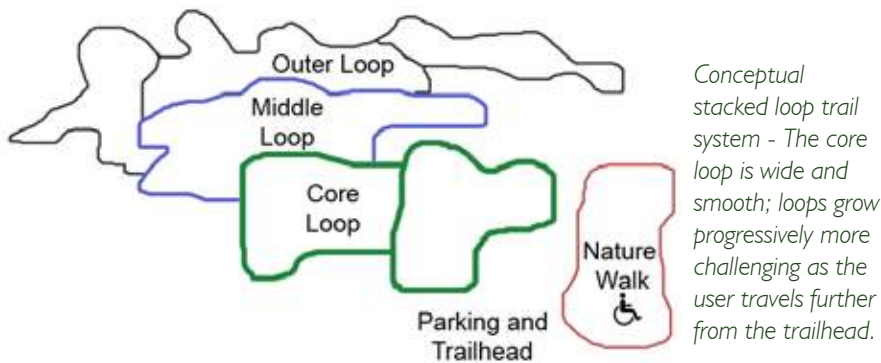
To  
Belvoir  
Ranch



## Trail User Groups

### OVERVIEW

Several groups of trail users can be accommodated on the Belvoir Ranch Open Space areas. These non-motorized user groups are generally compatible, given appropriate trail usage and facility design guidelines; however, each type of trail user has different needs. Each user type should be considered when creating a trail system that can function individually or as a larger network. Loop trail systems offer users variety, and stacked loops in particular make optimal use of available land while accommodating multiple types of users. An example of a stacked loop trail system is shown in the figure below:



### BICYCLISTS

There are three main types of bicyclists to consider when planning bicycle and trail facilities. Bicyclists can be classified by skill, experience, fitness level, and preferred riding surface.

- **TYPE "A" BICYCLISTS** are experienced riders who typically travel at speeds of 15-20 mph. These users often ride for commuting, fitness, or training purposes and are capable of long trips. Type "A" Bicyclists are comfortable and experienced riding in traffic and often prefer to use roadways.
- **TYPE "B/C" BICYCLISTS** include children and inexperienced adults. These riders typically travel at speeds of 5-15 mph, with an average trip length of 2.5 miles. Basic and child bicyclists are usually uncomfortable operating in traffic and prefer to use separated or designated bicycle facilities.
- **MOUNTAIN BIKERS** favor off-road bicycling, although grade and surface preferences vary widely with skill level. These users travel at speeds of 5-25 mph, with ride lengths varying considerably based on experience and fitness levels. Surface and grade preferences vary predictably by skill level, although a preference for scenic, undulating routes is shared among most users.

These user type considerations are important both for designing facilities within the Ranch and planning for non-motorized access to the site. For example, while Type "A" Bicyclists may be comfortable riding on the road to reach the Ranch, Type "B/C" Bicyclists would prefer or require a separate, designated bicycle facility.



Type "A" Bicyclists are comfortable riding on the road and are capable of longer rides.



Type "B/C" Bicyclists typically prefer designated, off-road bicycle facilities.



Mountain bikers typically seek out single track trails and varied terrain.



Hikers on a multi-day trip carrying packs and camping gear.



Trails with a gentle grade and even surface provide recreational opportunities for families, the elderly, and individuals with disabilities.



Trail surface is an important design consideration; horses can compact and/or displace trail surfaces.

## HIKERS

Hikers typically travel at speeds of 2-4 mph, covering between half a mile and 25 miles per day, depending on skill and fitness levels. The quality of the experience is important to hikers, and varying landscapes and scenic vistas are strongly preferred.

Different types of trails should be designed to accommodate various user types. Three potential types of hikes to provide include:

- **SHORT, GENTLE GRADE HIKES** with a wide, smooth tread, suitable for inexperienced hikers, families with children, and the elderly. Trails may be ADA accessible, provide environmental education or interpretive signage, and include amenities such as water fountains, restrooms, and benches.
- **DAY HIKES** over varied terrain, typically lasting several hours. Hikers using these trails typically carry day packs.
- **MULTI-DAY HIKES** require provisions (e.g. camp sites and possibly water sources) for hikers and backpackers passing through the Ranch on a regional hiking trip.

## EQUESTRIANS

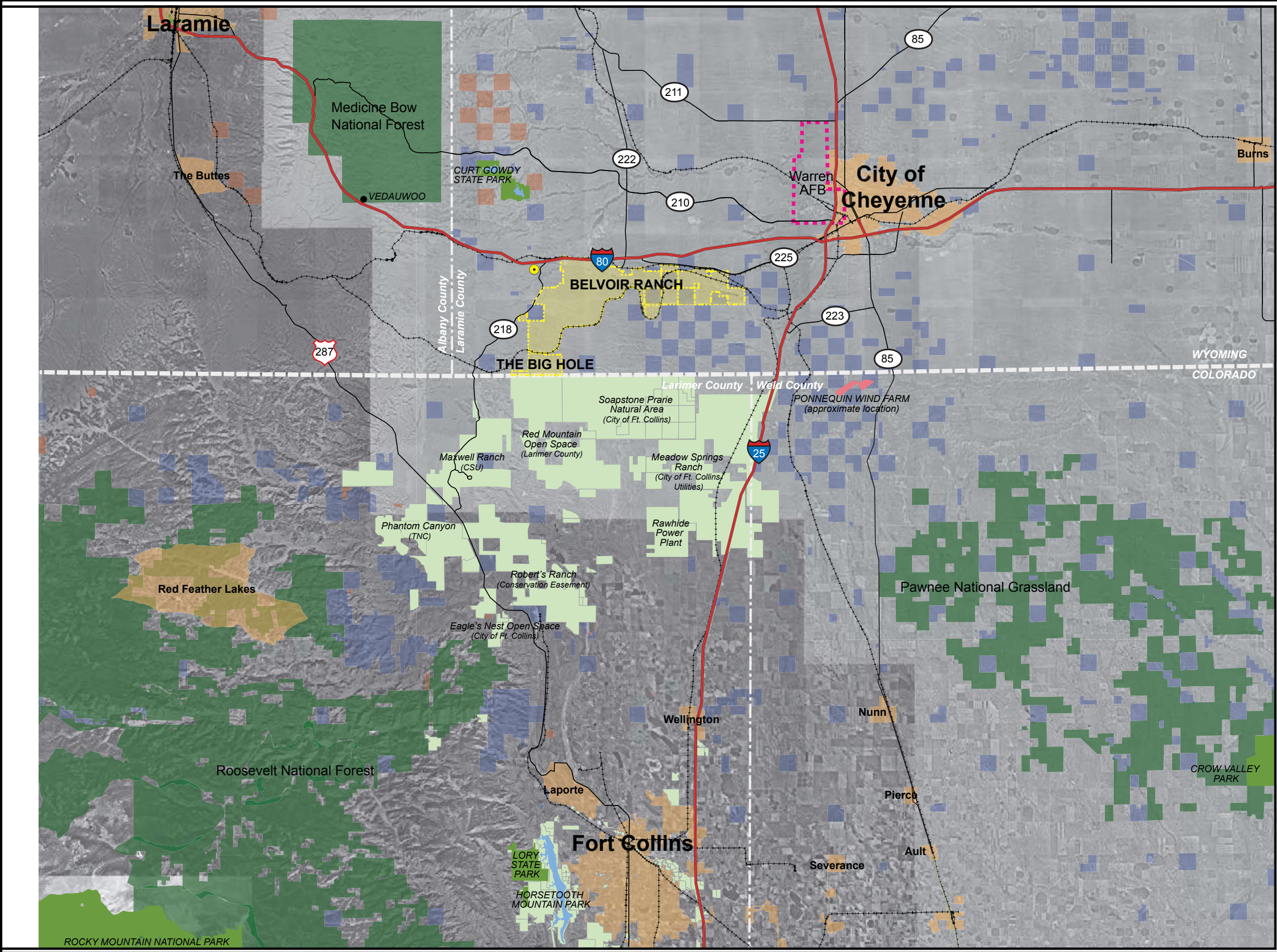
Equestrians can be divided into two main user types based on skill and experience:

- **NOVICE EQUESTRIANS** are inexperienced riders, typically riding with a guide. These users travel at speeds of 1-2 mph, usually for no more than two hours.
- **CROSS-COUNTRY EQUESTRIANS** are typically more experienced, have their own horses, and do not require guides. These riders usually travel at speeds of 3-5 mph and cover 20-25 miles per day.

Trail surface is an important consideration when designing facilities that will be used by equestrians. Horses create compaction and displacement of trail surfaces, especially at faster paces, so a durable tread is needed. Many horses and equestrians dislike steep or rocky surfaces.









REGIONAL CONTEXT

- RANCH BOUNDARIES
- ADJACENT OPEN SPACE
- OTHER POLITICAL BOUNDARIES
- US FOREST SERVICE
- US BUREAU OF LAND MANAGEMENT
- STATE LANDS
- STATE PARKS
- CITY/TOWNS
- RESERVOIRS
- INTERSTATE HIGHWAY
- MAJOR ROAD
- RAILROADS
- SCHOOL



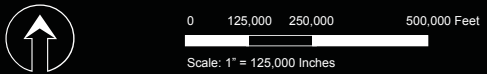
**CITY OF CHEYENNE**  
WYOMING



**wenk**  
ASSOCIATES

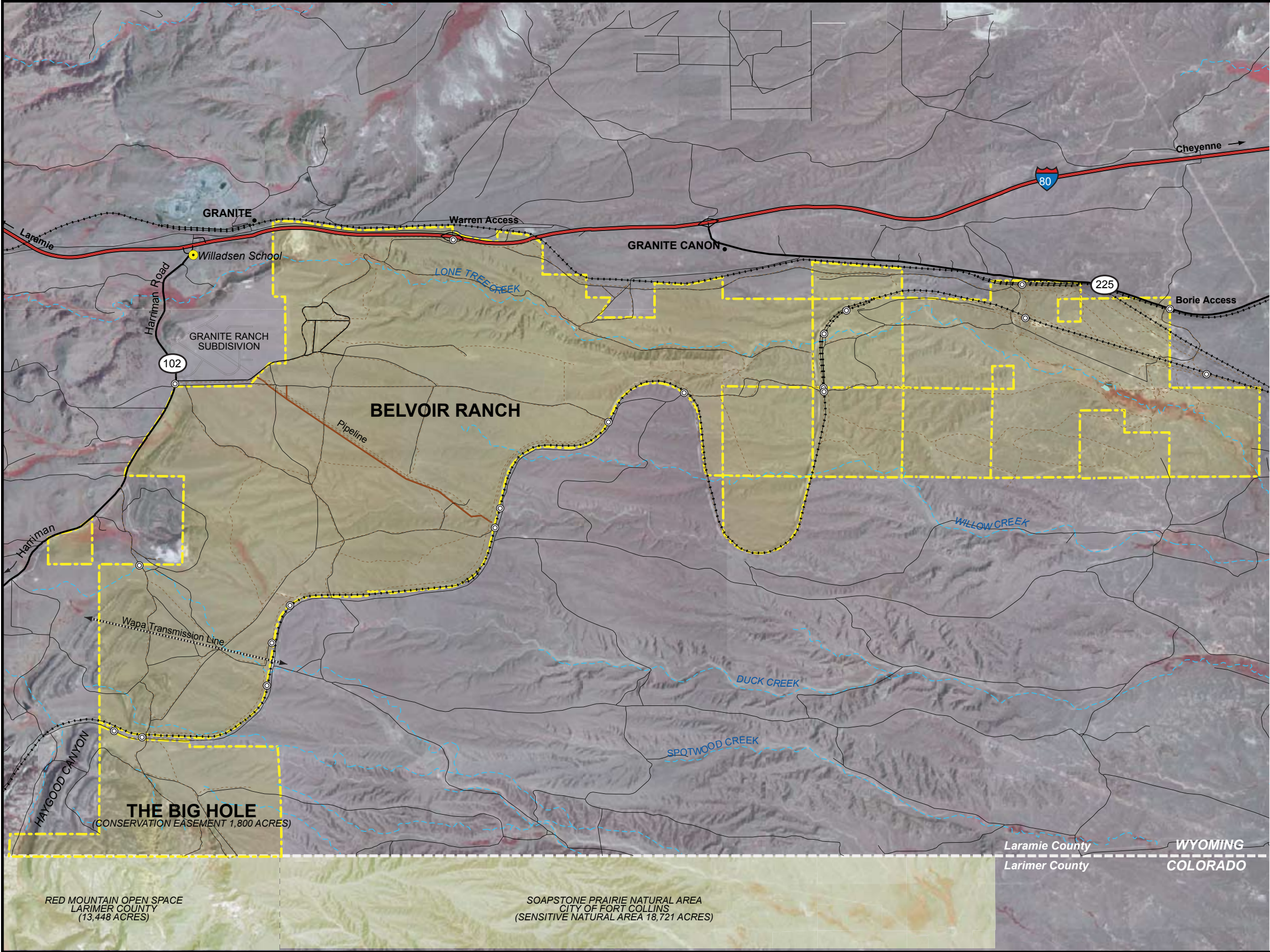
1335 ELATI STREET  
DENVER, CO 80204  
FAX: 628.0004  
303.628.0003

Date: October 25, 2007



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AERIAL

- RANCH BOUNDARIES
- ADJACENT OPEN SPACE
- INTERSTATE HIGHWAY
- MAJOR ROAD
- ROAD
- 2- TRACK ROAD
- MAJOR CREEKS
- RAILROADS
- PIPELINE
- SCHOOL
- ACCESS



CITY OF CHEYENNE  
WYOMING



1335 ELATI STREET  
DENVER, CO 80204  
TEL: 478-8004  
FAX: 478-8003

Date: October 25, 2007



0 2000 4000 8000 Feet  
Scale: 1" = 24,000 Inches

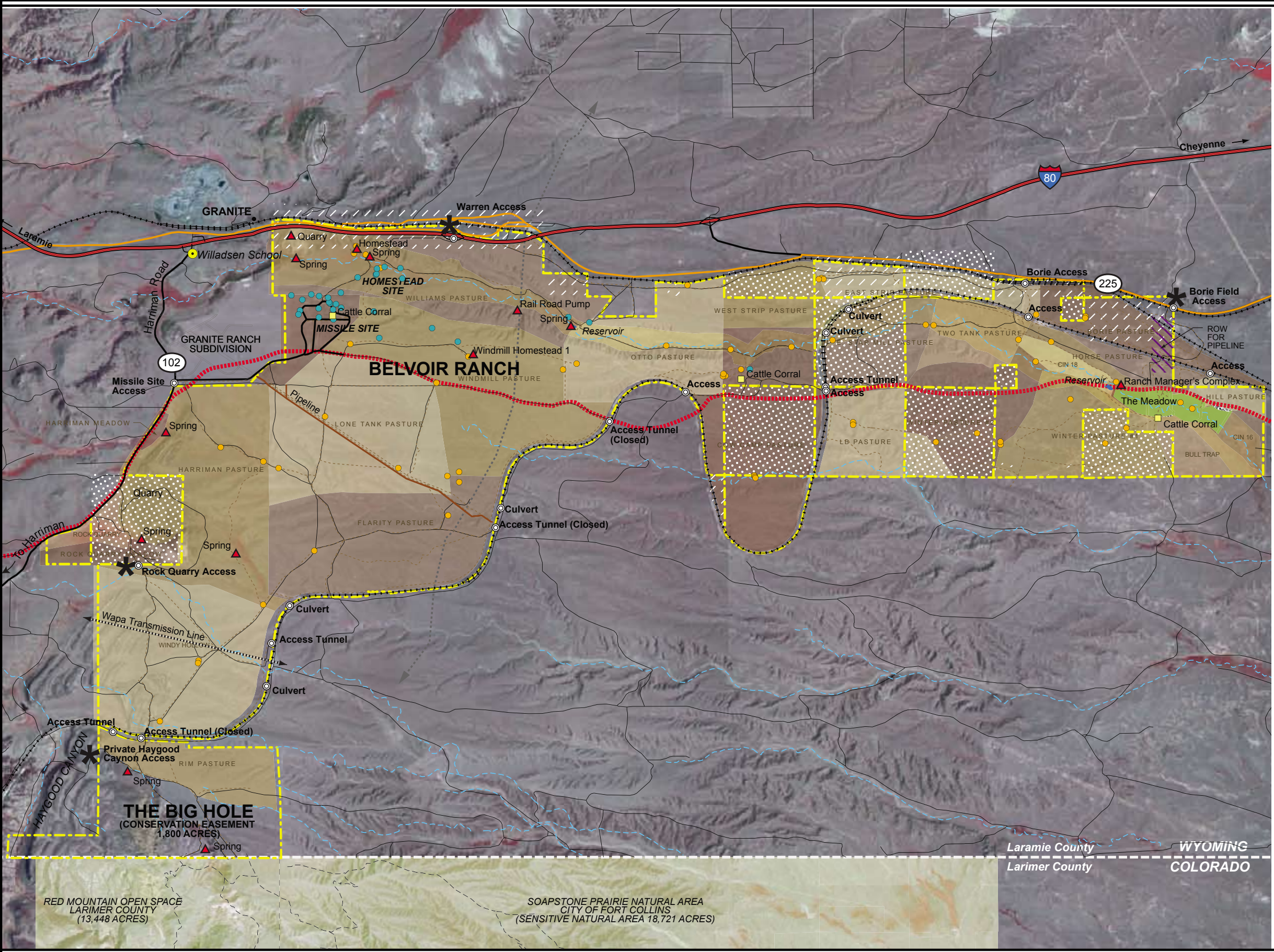
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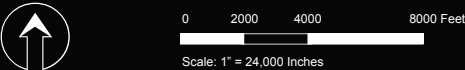


EXISTING CONDITIONS

- RANCH BOUNDARIES
- ADJACENT OPEN SPACE
- INTERSTATE HIGHWAY
- MAJOR ROAD
- ROAD
- 2- TRACK ROAD
- MAJOR CREEKS
- RAILROADS
- EXISTING PIPELINE
- STATE LEASES
- ROW LEASES
- HAY CUTTING/SPRING/FALL GRAZING AREA
- APPROXIMATE HISTORIC WAGON ROUTE
- BELVOIR/BOPU WELLS
- ARMY CORPS OF ENGINEERS WELLS
- ACCESS/CULVERT
- CULTURAL RESOURCE
- CATTLE CORRAL
- SCHOOL
- MAJOR ACCESS



Date: October 25, 2007



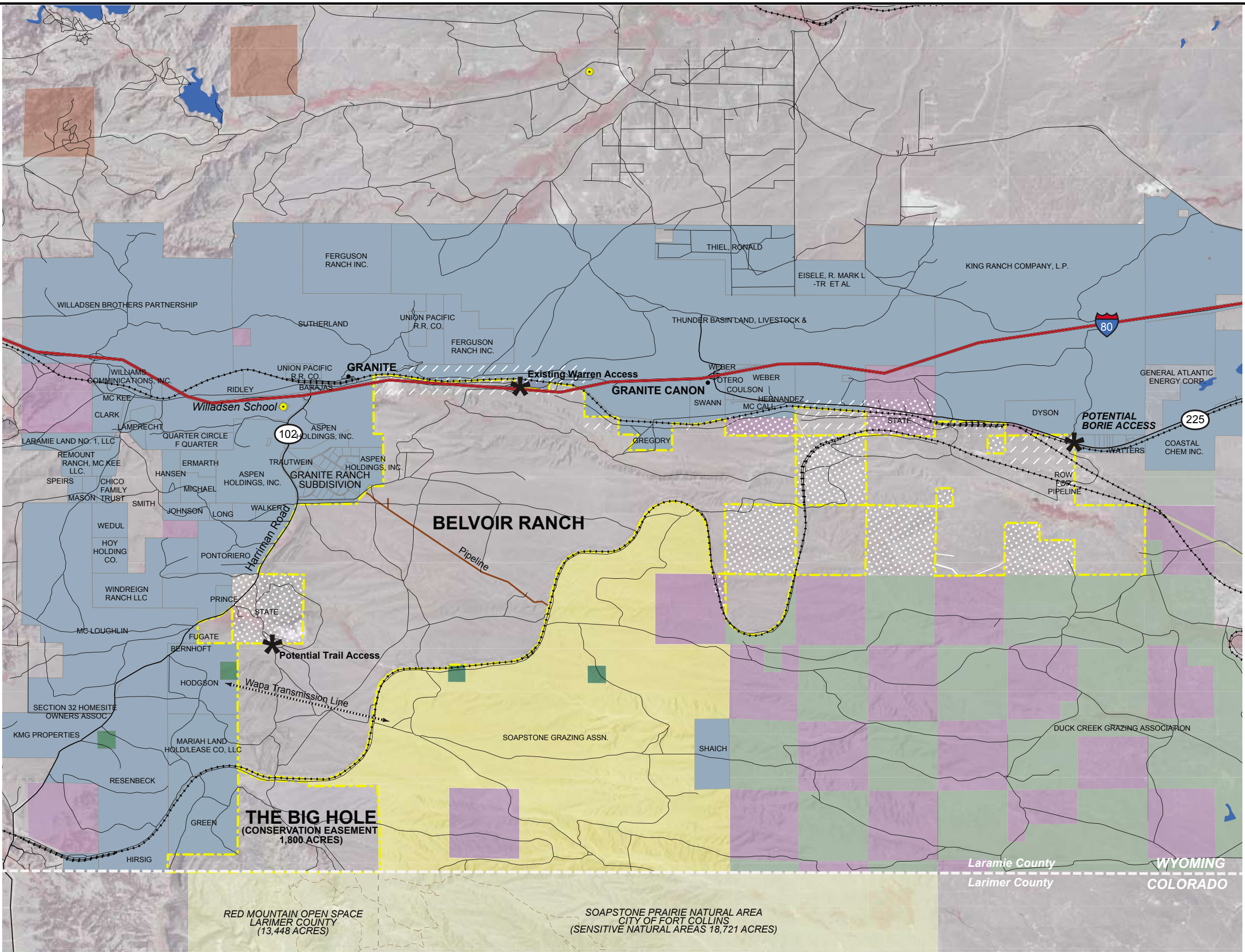
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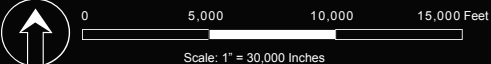


LAND OWNERSHIP

- RANCH BOUNDARIES
- ADJACENT OPEN SPACE
- INTERSTATE HIGHWAY
- MAJOR ROAD
- ROAD
- RAILROADS
- EXISTING PIPELINE
- STATE LEASES
- ROW LEASES
- GRAZING LANDS
- FEDERAL LANDS
- BLM LANDS
- STATE LANDS
- PRIVATE LANDS
- DUCK CREEK GRAZING ASSOC. LANDS
- SOAPSTONE GRAZING ASSOC. LANDS



Date: October 25, 2007



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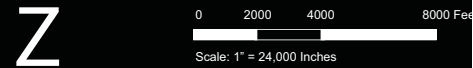




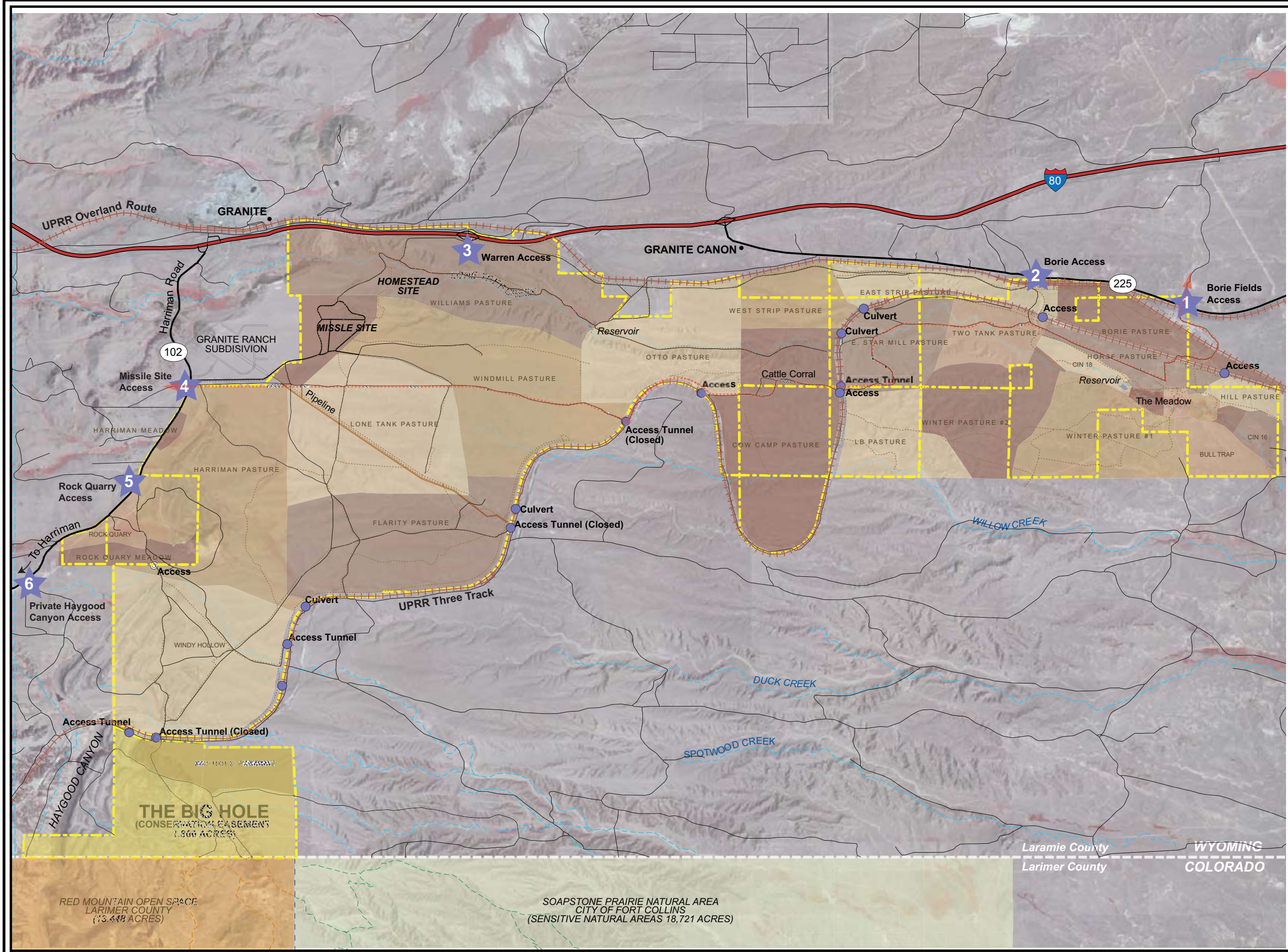
TRANSPORTATION

- RANCH BOUNDARIES
- ADJACENT OPEN SPACE
- INTERSTATE HIGHWAY
- MAJOR ROAD
- GRADED ROAD
- 2- TRACK ROAD
- MAJOR CREEKS
- UNION PACIFIC RAILROAD LINES
- EXISTING PIPELINE
- APPROXIMATE HISTORIC WAGON ROUTE
- VEHICULAR ENTRANCES
- ACCESS/CULVERTS
- PROPOSED TRAILS BY CITY OF FORT COLLINS, CO
- PROPOSED TRAILS BY LARIMER COUNTY, CO

DRAFT



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# STRUCTURE

SEPTEMBER 2008





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*Cheyenne is an authentic western town  
with deep historic roots.  
Its architecture, railroad and roadway connections,  
government and military functions,  
vibrant ranching and wide open spaces,  
form a unique heritage that endures today.  
The community believes that this heritage  
is key to Cheyenne's identity  
and important to preserve, enhance, and emulate.  
Growth and development signals the prosperity of our community  
and encourages ambition and innovation  
that characterizes a great place to live.  
New development should enhance Cheyenne's  
western town character and quality of life,  
creating a tapestry that future generations continue to admire,  
instilling a pride in calling Cheyenne "home."*

*- PlanCheyenne*

## Structure: A Framework for Belvoir Ranch Development

### ELEMENTS OF STRUCTURE

*Structure* provides a framework for future use and development of the Belvoir Ranch and The Big Hole properties. Developed through a community-driven planning process, this handbook is intended to ensure that any future development of these wonderful properties responds to three overarching community goals: character, quality, and authenticity.

Five major sections make up this handbook, including:

**1:** *A Community-Driven Planning Process*

This section tells the story of the purchase of the Belvoir Ranch and The Big Hole properties, and how the community has been involved in the master planning process.

**2:** *A Vision for Stewardship of Belvoir Ranch and The Big Hole*

This section offers a broad, long-term vision that can be used as a “touchstone” for evaluating the types of uses and development that are appropriate for the properties, to ensure that they are cared for properly and remain an important part of Cheyenne’s legacy for generations to come.

**3:** *Existing Site Conditions and Planning Considerations*

The map and accompanying text describes the site’s landscape, streams and creeks, wildlife habitat, archaeological artifacts, views, and other significant elements of the properties. It also reviews major considerations, including existing ranching and railroad operations, that will affect any future public use and development.

**4:** *Significant Character Zones*

Because the properties together encompass almost 22,000 acres, looking at smaller, distinct character zones helps us to break the planning process down into more manageable pieces, as well as understand the special qualities that make each of these zones unique and special. These character zones are defined based on existing site conditions and current uses and activities.

**5:** *Design Principles*

This final section illustrates methods for promoting sustainable site development. They are intended to guide the implementation of the Master Plan, including both construction of new facilities and management of the property, over many years. They illustrate what it means to be responsible stewards of the land, as well as “best practices” that should be encouraged.



*Aerial view of cattle grazing along Lone Tree Creek looking southwest.*

## ONE OF FOUR PARTS OF THE BELVOIR RANCH MASTER PLAN

This handbook is one of four parts of the Belvoir Ranch Master Plan, which will become a component of *PlanCheyenne*, the Cheyenne Area *Comprehensive Plan*.

- ★ *Snapshot* involves collecting, assembling and analyzing relevant data on existing site conditions.
- ★ *Structure* establishes the building blocks that shape the properties' physical character and conceptualizes the community's vision.
- ★ *Shape* documents the Master Development Plan and provides policies and guidelines for managing the properties so that their significant qualities and features will be preserved for future generations of Cheyenne residents.
- ★ *Build* provides strategies for phasing in proposed improvements, as well as approaches to financing capital construction and ongoing operating costs.

## HOW TO USE THIS HANDBOOK

It may take many years to implement some or all of the improvements on the Belvoir Ranch and The Big Hole properties, and some modifications may be made to the plan as community needs evolve and change. This handbook is intended to serve as a guide for interpreting the community's intentions for the properties, the importance of sustainable stewardship, the types of uses that are compatible in each zone, and management practices that will preserve underlying resources.

The Design Principles are not intended to be rigidly prescriptive, nor to constrain creative design. Rather, they represent “best practices” for designing and managing with a light hand, with respect for the properties' special character, and with an eye toward conserving finite or non-renewable resources.

They also address the features that contribute to character, quality, and authenticity — and that make the properties wonderful examples of Cheyenne's heritage. The principles are accompanied by photos and character sketches that illustrate these concepts. Together, the text and images are the basis for the development plan's form and visual character.



## A Community-Driven Planning Process

Community participation is essential in developing a sound and implementable master plan for the Belvoir Ranch and The Big Hole properties. Because the properties were purchased with public funds, and for public benefit, community opinions about how the properties should ultimately be developed, were key considerations in the planning process.

This section tells the story of the Ranch and The Big Hole purchases, and describes how Cheyenne residents has a key hand in developing the Plan.

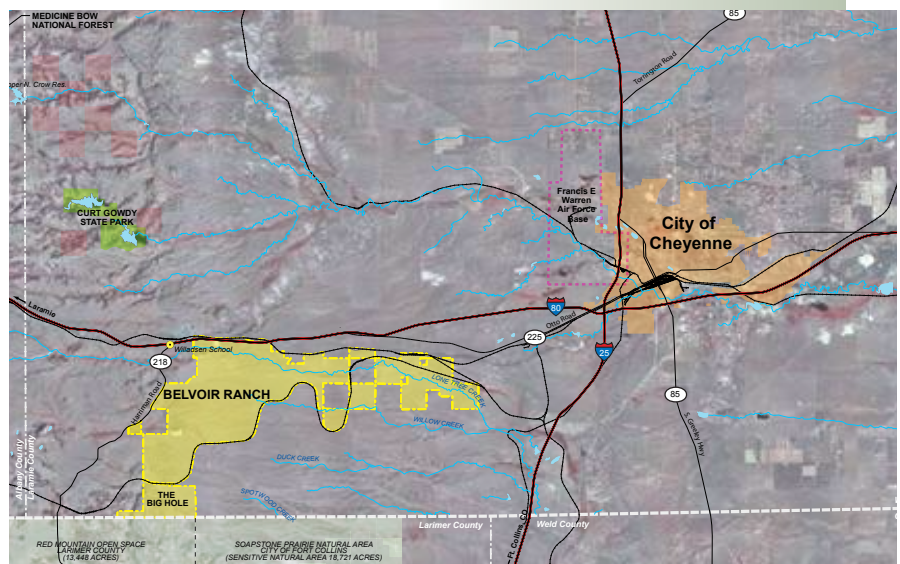
### PURCHASING BELVOIR RANCH AND THE BIG HOLE

Located 16 miles west of Cheyenne, Belvoir Ranch and The Big Hole consist of 18,800 acres with an additional 3,400 acres of land leased from the State of Wyoming.

The 2003 purchase of Belvoir Ranch was funded by The City of Cheyenne Board of Public Utilities (BOPU) to expand the City's water supply, and by the Department of Public Works for a possible landfill site. Purchase of the Ranch property allows for expansion of the City's infrastructure as it grows, as well as for compatible recreation.



*Public input was a key part of developing the Plan for the Ranch.*



*Belvoir Ranch Context Map*

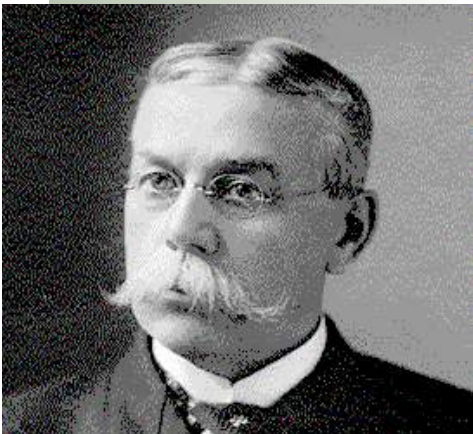


*View of The Big Hole from the rim property*

The Big Hole was purchased in 2005 from The Nature Conservancy, which holds a conservation agreement on the property. It consists of 1,000 acres of rim property and 800 acres of spectacular red rock canyon scenery. It is part of a regional area identified as the Laramie/Foothills Mountain to Plains Project, which is sponsored by Larimer County, the City of Fort Collins, the Nature Conservancy, and the Legacy Land Trust.

The property will most likely remain natural, allowing selected, low-impact activities such as hiking or horseback riding. Management of The Big Hole will happen through a partnership between the City of Cheyenne, Larimer County, and the Nature Conservancy.

*The Belvoir Ranch area has been a colorful part of Cheyenne's history for generations.*



*Francis E. Warren (photo: Wyoming State Historic Preservation Office)*

In the 1860s, the Ranch property included a number of smaller homesteads, that would be consolidated in the next decade by the vast Warren Livestock Company, owned by Francis E. Warren, former Territorial and State Governor. In 1905, Captain John (Blackjack) Pershing married one of Warren's daughters and the buildings that formed the core of what became Belvoir Ranch, came to him in marriage. Ranching and grazing have been central features of the property since that time.

The railroad has been a major presence for almost as long. The construction of the Transcontinental Railroad during the 1860s contributed significantly to Cheyenne's development as the "Magic City of the Plains" and to the growth of the Union Pacific Railroad. In 1867, the railroad's chief engineer selected a location that would become a division point for the Union Pacific and named it Cheyenne. By the year's end, the new city housed thousands of people. As railroad robberies became prevalent, the U.S. military established forts, including Fort Russell (later F.E. Warren Air Force Base) to protect railroad workers and civilians. Railroad routes through the Ranch property remain in use today.



*Union Pacific Railroad track laying in Wyoming (photo: Wyoming Tales and Trails.com)*

During the Cold War, the Air Force constructed several Atlas Missile silos on the Ranch. These were abandoned several years later, though the silo structures still remain as a reminder of this period in the community's history.

## THE PLANNING CONTEXT

Cheyenne is a community with a rich planning tradition—a tradition that has shaped and guided planning for the future development of Belvoir Ranch. Two plans, in particular, are important to mention.

In 2002, the Greater Cheyenne Chamber of Commerce launched *Vision 2020*, a community visioning process. At the time, planners noted that “...Cheyenne is poised to become the northern anchor for the booming Front Range economy and a complete community that attracts people because of its quality of life.” The community-driven vision stresses the importance of the City’s history, image and quality of life to economic health and residents’ well-being.

Important goals that followed from this vision included protecting natural areas, conserving water, supporting the City’s agricultural areas, and protecting key wildlife habitat. Significant in this planning process was the connection that was made between protecting valued resources and community quality of life, and the idea that open space could act as a “draw” that would stimulate positive economic investment and prosperity.

In 2006, the City completed *PlanCheyenne*, a major update to the Cheyenne Area’s Comprehensive Plan that is intended to guide growth while retaining the character and authenticity that make the City so unique and special.

*PlanCheyenne* is important to the Belvoir Ranch/The Big Hole planning for a couple reasons.

- ★ **First**, the Plan reinforces and emphasizes the relationship between preservation of open lands, quality built environments, quality of life, and economic growth and prosperity; this helps us to understand how this vast property can be a significant asset for Cheyenne.
- ★ **Second**, the planning process and innovative approaches for drawing members of the public into the discussion, are important models for this planning effort.





*Potential land use and recreational opportunities were evaluated with a dot-voting exercise at a public meeting.*

## HOW CHEYENNE RESIDENTS HAVE SHAPED THE BELVOIR RANCH/THE BIG HOLE PLAN

Cheyenne residents have participated actively in the planning process. Since the properties are not open to public access, few residents have actually seen the site — posing a challenge for the planning team. Through the use of an aerial video, shot from a helicopter, the City has been able to allow residents to “experience” the site and understand its unique qualities.

An initial “visioning” workshop was held in June 2007, drawing approximately 70 people, who were able to express their views on how best to use the site, key areas for conservation, and areas that might be developed in a compatible manner to provide income to the City. Based on that workshop, the vision and design principles presented in this document were developed and refined.

The vision and principles then guided the creation of a preliminary land use plan that defines appropriate uses and organizes them on the property. This preliminary plan was discussed at a second workshop, held in October 2007, and participants’ recommendations for revisions were then incorporated into a revised plan.

The next section of this document presents the vision for stewardship of the Belvoir Ranch and The Big Hole properties.

## A Vision for Stewardship of Belvoir Ranch and The Big Hole

### VISION

The community's vision for Belvoir Ranch and The Big Hole properties is an enduring statement about the value and significance of the properties and how the qualities that make them valuable, should be preserved. It is a statement about a desired future, that should inspire and motivate, even though fully realizing the vision may take many years.

Finally, a good vision statement is inclusive, flexible enough to support many ideas and points of view, and allowing everyone to feel that their particular interests and perspectives can be accommodated. The Cheyenne community's vision for stewardship of these magnificent properties is summarized in the box to the right.



*Belvoir Ranch is a unique and significant piece of Cheyenne's rich cultural heritage and regional open space system.*

*To be responsible stewards of the land, the City of Cheyenne and the Board of Public Utilities are seeking to manage it as a sustainable "working landscape" that contributes to the area's economy and its quality of life.*

*The Ranch shall be managed as a community asset and legacy, balancing uses and resources in such a way as to sustain its unique landscape character and heritage, for generations to come.*



CONCEPTUAL CHARACTER IMAGES



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## Existing Site Features and Planning Considerations

### WHAT MAKES BELVOIR RANCH AND THE BIG HOLE SPECIAL?

Located 16 miles west of Cheyenne, Belvoir Ranch and The Big Hole consist of 18,800 acres with an additional 3,400 acres of land leased from the State of Wyoming.

The Ranch is bounded by I-80 and Route 225/Otto Road to the north. Union Pacific Railroad (UPRR) is the southern boundary on the west end of the Ranch. The UPRR track runs north and south, bisecting the property. The UPRR tracks then travel along the northern boundary on the east end of the Ranch.

*Opportunities for City Water and Waste Management:* The purchase of Belvoir Ranch was funded by The City of Cheyenne Board of Public Utilities (BOPU) to expand the City's water supply, and by the Department of Public Works for a possible landfill site. Both allow for expansion of the City's infrastructure as it grows.

BOPU has three hydrogeologic studies underway. These test wells have found abundant groundwater in aquifers underneath the Ranch.

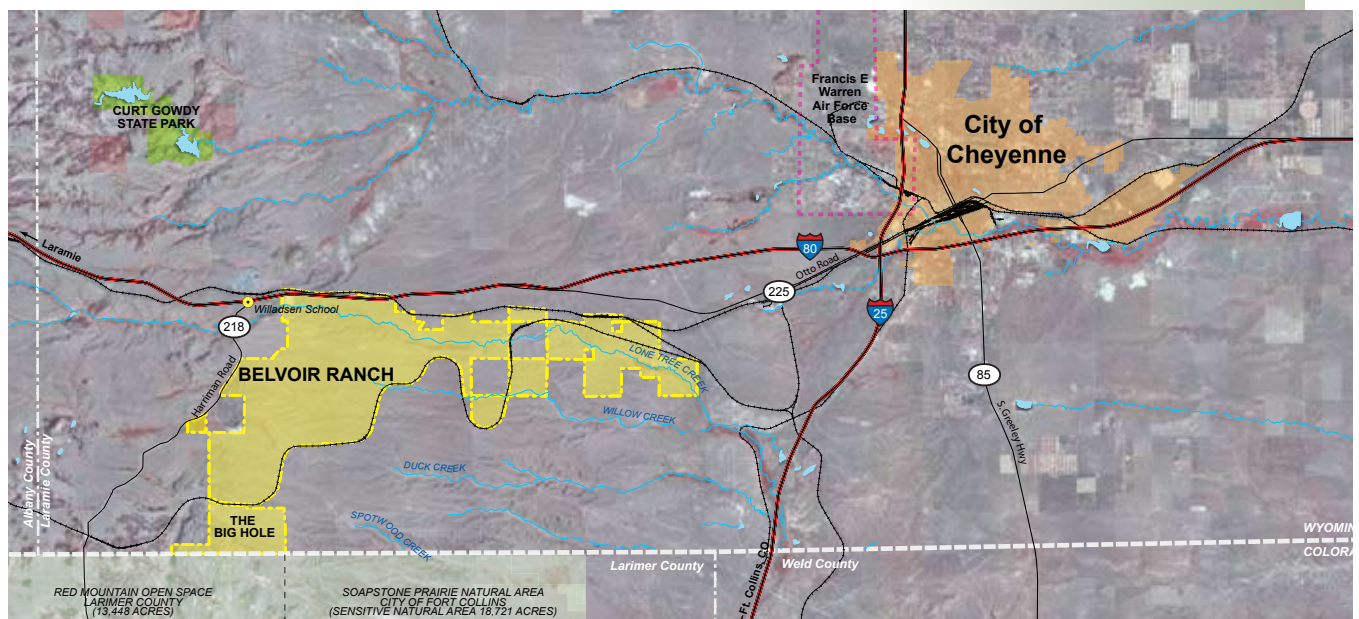
A landfill is being considered for an area in the southwestern portion of the property. It is expected to utilize up to 600 acres with a five-mile access road constructed from the Warren I-80 access.



The southern boundary of the Ranch is defined by the UPRR.



Over 2,000 head of livestock currently graze on the Ranch.



Belvoir Ranch Context Map



Significant historic sites, like this homestead above, will need to be surveyed prior to any future development.

*Continuing a Ranching Heritage:* Belvoir Ranch is currently a working ranch with nearly 20,000 acres under a grazing management plan. Each year, over 2,000 head of livestock are grazed on the property. The Ranch headquarters is at the eastern end of the ranch. Housing, barns, corrals and prime pasturing are all in the Meadow Pasture, one of 28. The headquarters provides an excellent opportunity for animal-related recreational activities.

*Significant Archaeological Sites:* Prehistoric and modern peoples inhabited the Ranch and The Big Hole and many of these historically significant cultural sites have yet to be surveyed. These sites, along the western edge of Belvoir and continuing into The Big Hole, will need to be surveyed prior to any future development. The Opportunities and Constraints map illustrates, in very general terms, the zones in which the largest concentrations of these sites are located.



Prime wildlife viewing areas have been identified on the Ranch.

*Wildlife and Plant Life:* The dominant habitat type in Belvoir Ranch is mixed-grass prairie, which is home to many species of plants and wildlife. These include antelope, mule deer, elk, fox, bear, small mammals, rattlesnakes, birds, hawks and raptors to name a few. Prime wildlife viewing areas are indicated on the Opportunities and Constraints map. In addition, Belvoir has habitat for the Colorado butterfly plant, listed as threatened under the Endangered Species Act. A golden eagle's nest is located in the northwest corner of Belvoir. Other sensitive species on the Ranch include Preble's meadow jumping mouse and Howard's evening primrose.

*Landforms:* The predominant landform embracing the Ranch is rolling prairie sliced by draws formed by drainageways. However in some areas, there is significant topographic variation that has potential for challenging mountain bike trails.

The vast treeless rolling prairie offers limitless vistas underscoring the richness of open space. Views to the southwest settle on the Rocky Mountains and to the West the Twin Peaks reinforcing the Mountains to the Prairie connectedness. At the west end of the Lone Tree Creek corridor is a historical site that is accented with mature trees.



Some areas of the Ranch have potential for challenging mountain bike trails.

*Historic Travelways:* Three historic travel routes cross Belvoir Ranch. The Lincoln Highway (US 30) route follows the northern boundary of the Ranch. The Twin Mountain Wagon Road runs east and west and bisects the Ranch then follows the Ranch boundary as it turns towards the southwest. The Denver Fort Laramie Road runs north and south through the Ranch. The remnants of historic ranch buildings can be found along the route.



*The Atlas Missile site* is relatively intact and represents defense systems during the Cold War period. The Missile site is easily accessed via a short direct paved road that could be simply modified with vehicle access control gates. In so doing the relatively level area could be utilized for large group special events with minimal environmental impact or infrastructure cost.

*Access Points:* Existing and potential access points have been identified and are labeled on the map. The existing Warren access is the most suitable gateway for public access to Belvoir Ranch at this time.

The private access at Borie Field (Route 225/Otto Road) will remain operational for ranch personnel to access the Ranch Headquarters from Otto Road. However, this entry will not be a public road unless substantial design improvements are made to three railroad crossings.

Potential secondary, or controlled, access points might include:

- **Borie (Otto Road)**, an at grade access with 6 railroad crossings where 80+ trains cross per day;
- **Missile Site**, a potential controlled access point off Harriman Road;
- **Rock Quarry**, another potential access point from Harriman Road that will require an easement across State property;
- **Haygood**, another access point from Harriman Road that would require an easement through private property.

Railroad crossings (at-grade or underneath the rail through culverts) are also shown.

*Links With Regional Open Space:* Opportunities for connectivity and integration with other significant open space properties exist. Red Mountain Open Space and Soapstone Prairie Natural Area in Colorado are currently being planned and trails connecting to The Big Hole will be open as early as 2009. Opportunities for greenway bike trails connecting to the City of Cheyenne and other parks, such as Curt Gowdy State Park, may also be possible.

*Renewable Energy:* Wind energy development may be a viable option for revenue generation on the Ranch. The wind resource at Belvoir Ranch is classified by the National Renewable Energy Lab as between class 4 and 6 (“good” to “outstanding”) for wind power production. Class 7 (“superb”) is the highest classification. Wind corridors have been identified based on topography following ridgelines on the western portion of the property. They represent the most suitable locations to be developed.



*The former Atlas Missile site could tell the story of the Cold War.*



*Existing Borie Fields access bridge over the UPRR Overland Route would require reconstruction to allow public access into the Ranch.*



*Viable wind corridors have been identified on Belvoir Ranch.*





*Natural gas pipeline running through Belvoir Ranch.*



*Existing transmission line running east-west on the southwestern half of the Ranch.*

*Wells and Pipelines:* Utilities on Belvoir Ranch include a transmission line, oil wells, groundwater monitoring and test wells, and two pipelines.

The Ranch has groundwater monitoring and test wells covering the site. The Army Corps of Engineers has monitoring wells throughout the site testing the extent of trichloroethylene (TCE) contamination from the Atlas Missile Site. The City of Cheyenne Board of Public Utilities has groundwater test wells throughout the Ranch. Additional, existing aquifers and wells can also be found throughout the site.

Two oil wells are located on the eastern end of the site. No transmission lines are associated with these wells. Two natural gas underground pipelines run from the corner of the Granite Ranch Subdivision southeasterly to the Union Pacific Railroad right of way, each with a 50-foot easement. Western Area Power Administration (WAPA) transmission line crosses Belvoir near Haygood Canyon and runs towards the east.

**INSERT 11x17  
OPPORTUNITIES/CONSTRAINTS MAP  
HERE  
(Z-fold)**





OPPORTUNITIES/CONSTRAINTS MAP

- EXISTING PRIMARY ACCESS POINT
- POTENTIAL ACCESS POINT
- EXISTING UPRR ROW CROSSINGS
- CORRALS
- SPRING
- HISTORIC AREA
- HISTORIC STRUCTURE
- LARGE EXISTING WELL (BOPU)
- THREATENED AND ENDANGERED OR SENSITIVE SPECIES
- POTENTIAL WILDLIFE VIEWING POINT
- EXISTING PIPELINE/UTILITY CORRIDOR
- PROPOSED PIPELINE ALIGNMENT (BOPU)
- POSSIBLE FUTURE PIPELINES (BOPU)
- POTENTIAL LANDFILL ROAD
- HISTORIC ROUTE OR ROAD
- INTERSTATE HIGHWAY
- MAJOR ROAD
- GRADED ROAD
- EXISTING TRAIL OR 2-TRACK ROAD
- MAJOR CREEK
- RAILROAD
- RANCH PLANNING BOUNDARY
- STATE LEASES
- ROW LEASES
- THE BIG HOLE CONSERVATION EASEMENT
- ADJACENT PUBLIC OPEN SPACE
- MEADOW/HAY CUTTING AREA
- SENSITIVE CULTURAL AREA
- COLORADO BUTTERFLY PLANT WILDLIFE EXTENSION AGREEMENT
- PRIME WILDLIFE VIEWING AREA
- POTENTIAL WIND GENERATION AREA

POTENTIAL WIND GENERATION AREA ACREAGES	
AREA	AC
A	190
B	475
C	525
D	965
E	940
F	250
G	140
TOTAL	3485 AC



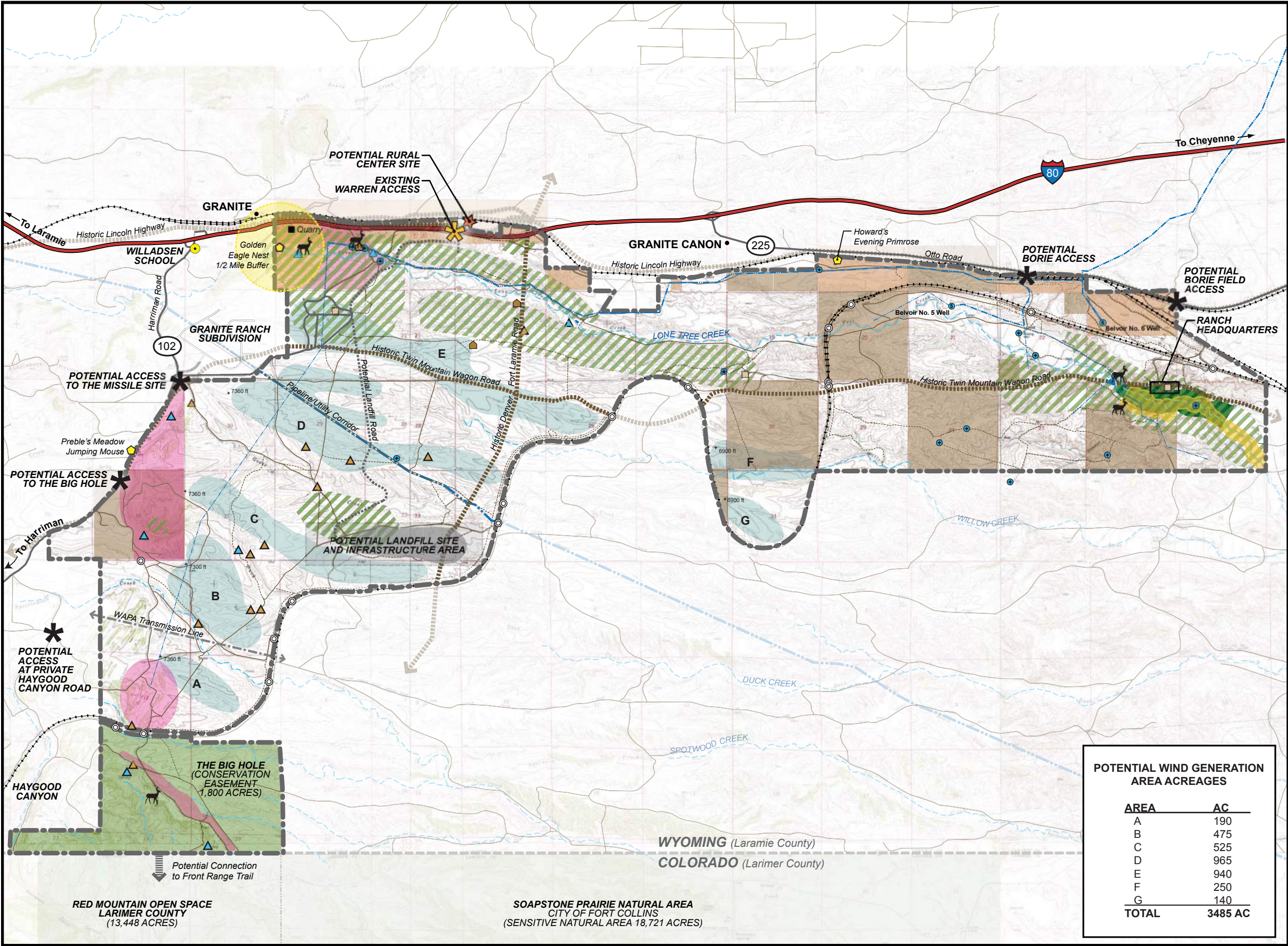
CITY OF CHEYENNE  
WYOMING

Date: June 2008



0 2000 4000 8000 Feet  
Scale approximate - for planning purposes only.

NOTE: THE SCALE AND CONFIGURATION OF ALL INFORMATION SHOWN HEREON ARE APPROXIMATE ONLY AND ARE NOT INTENDED AS A GUIDE FOR DESIGN OR SURVEY WORK. REPRODUCTION IS NOT PERMITTED WITHOUT PRIOR WRITTEN PERMISSION FROM THE CITY OF CHEYENNE PLANNING DEPARTMENT.







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## Significant Character Zones

### HOW DO WE PLAN FOR A 22,000 ACRE PROPERTY?

With a property so large, how do we even begin to think about planning for uses and activities at Belvoir Ranch and The Big Hole?

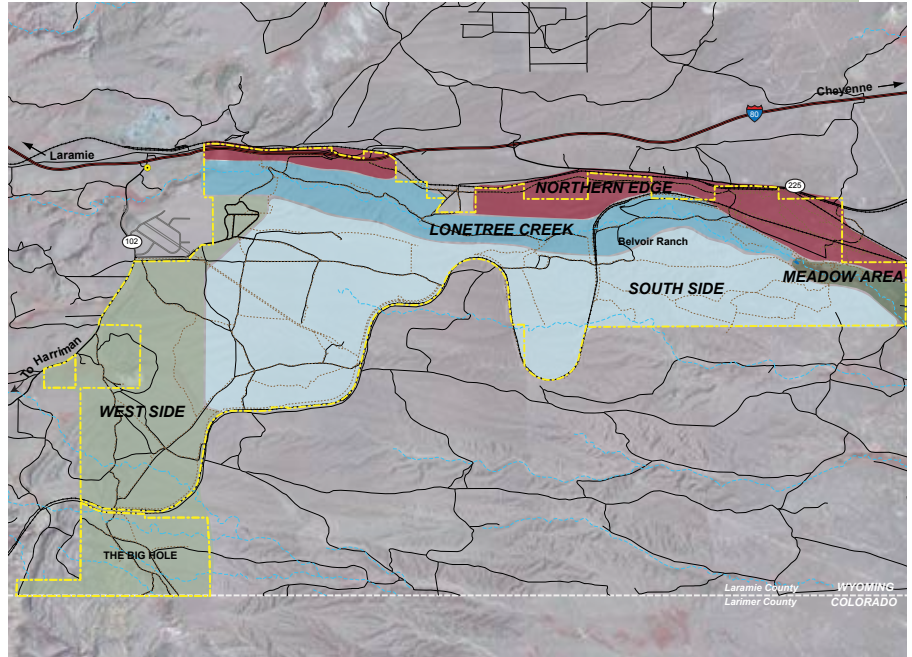
Having analyzed existing conditions, locations of significant resources, and important considerations such as access, the planning team has identified five distinct zones that have differing resources and opportunities for use and development. These are discussed below.

#### ZONE 1: The Meadow

Belvoir's hay meadow is a special but scarce resource, covering only three percent of the site's land area. It is flood irrigated with water from Lone Tree Creek and the Borie Well, and maintains a lush appearance and character. It is the first pasture in which new calves are placed each spring, and is also near the site of the original Ranch House. Recreation development in and around the meadow could offer opportunities to demonstrate environmental stewardship.

#### ZONE 2: Lone Tree Creek

The area along Belvoir's Lone Tree Creek provides significant habitat for birds and other wildlife. The corridor is lined with cottonwoods and willows. Many remnant homesteads and windbreak landscapes are still visible along the creek.



*Belvoir Ranch can be divided into five character zones based on physiographic features, resource values and considerations, access, and potential uses. A program, concept plan and management plan will be tailored to each zone to ensure that the use program is compatible with resource protection.*



ZONE 1: The hay meadow in The Meadow area is a special, but scarce, resource on the Ranch.



ZONE 2: Lone Tree Creek is a perennial stream corridor providing significant habitat for birds and other wildlife.



*ZONE 3: Northern Edge of the Ranch is bound by roads and rail lines.*

### *ZONE 3: Northern Edge*

Bounded by roads and rail lines, the northern edge provides access to the site from I-80 and a narrow corridor for grazing and wildlife.

### *ZONE 4: South Side*

Relatively remote, the south side features grazing pastures, topography that varies from flat to rolling, historic resources, and views to Rocky Mountain National Park.

### *ZONE 5: West Side*

This area is abundant with historic resources and opportunities for recreation and observing wildlife. Here, the landscape shifts from undulating mixed-grass prairie to more prevalent rocky outcrops with mountain mahogany and antelope bitterbrush to a ponderosa pine community at an elevation of approximately 7,300 feet. This area also provides access to The Big Hole's dramatic red stone canyons.



*ZONE 4: Much of the South Side is bound by rail lines.*



*ZONE 3: The West Side landscape consists of rocky outcrops surrounded by mountain mahogany.*



## Design Principles for Structure Plan Elements



(Left to right) A homesteader's hand-dug well from the late 1800s; Interpretive signage; Mountain biking trail system being developed in Curt Gowdy State Park (photo courtesy of Kevin Rokke); Cattle grazing on Belvoir Ranch.

This section offers design principles for sustainable site planning and management. They cover four areas:

- ✦ *Sustainable Resource Management:* These are the elements that give the site its special character. Principles for minimizing or mitigating impacts to these resources are provided.
- ✦ *Sustainable Facilities and Development:* This category covers the built environment, and how that environment is intended to harmonize with the property's natural features. It also covers overhead transmission lines and other utilities.
- ✦ *Access and Circulation:* Gateways, roadways, trails and trailheads are covered here.
- ✦ *Sustainable Property Management:* This section addresses visitor safety and security, and "best practices" for avoiding conflicts between recreational users and other ranch functions, like grazing.



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## Sustainable Resource Management

Belvoir Ranch and The Big Hole are wonderfully diverse environments.

Their landscapes range from rolling, high prairie grasslands, to stream corridors lined with willows and occasional stately cottonwoods, to the spectacular red rock canyon of The Big Hole. Birds and animals abound: visitors may see antelope and mule deer, or hawks and eagles soaring and circling overhead. From spring through fall, cattle may be grazing or moving from pasture to pasture.

Lone Tree Creek and its minor tributaries are especially unique environments. Though no longer a perennial stream, when water is flowing during the spring months, the creek is transformed into a lush green corridor. It is not surprising that many of the old homesteads are located near the creek, and visitors can enjoy looking at these relics and imagining how early settlers lived in what could be such a harsh and challenging environment.

The vastness and openness of the properties, and long panoramic views, are also special character-giving qualities. Visitors can see for miles in all directions, with views of the Front Range and Long's Peak to the west.

These resources and special qualities are reasons why Cheyenne residents — and visitors from other areas — value Belvoir Ranch and The Big Hole. This section provides a series of design principles whose overall goals are to ensure that these resources are preserved for future generations to contemplate and enjoy.

### WHY ARE THESE PRINCIPLES IMPORTANT?

- ★ *The properties' underlying resources — the scenic views, wildlife, high prairie landscape, and sense of vast openness — contribute significantly to their special character.*
- ★ *These resources are finite: once they are lost or diminished, they are impossible to re-create.*
- ★ *Careful stewardship of these resources — for example, avoiding active uses in sensitive areas, closing areas seasonally during nesting or breeding seasons, providing generous buffers around stream corridors, and siting development to avoid interrupting long views — can help to ensure that they can be enjoyed for generations to come.*



*Willow windrow contrasting with the blue sky above is an example of the scenic qualities that contribute significantly to the special character of the Ranch.*





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## Cultural Resources

### PURPOSE

*Cultural resources tell the story of the ranch's settlement, from prehistoric artifacts, to Native American tepee rings, to the ranch and railroad era of the late 1800s, to the mid-20th century missile silos. Together, these resources shape an identity unique to Cheyenne.*



*Windrows, a remnant of past homesteading, remain in Belvoir Ranch.*



*Missile silos (above)  
and a homesteaders hand-dug well  
from the late 1800s (below).*

### PRINCIPLES

1. Protect potential prehistoric resource areas until they can be surveyed and documented.
2. Protect, enhance, and interpret cultural resources that relate to historic roads, homesteading, the railroad, and military history.
3. Provide a variety of media and methods to educate the visiting public about the Ranch's significance, and to provide a variety of options for interpretation.
4. Manage public access to cultural resources in a manner that allows compatible uses and intensities, without degrading the integrity of the resource.
5. Maintain ties to the Ranch's agricultural history by enhancing the viability of its agricultural production and uses.

## 5 SUSTAINABLE RESOURCE MANAGEMENT

### Ranch Ecology

#### PURPOSE

*The Ranch is located in the transition zone from the Rockies to the High Plains. Much of the Ranch is characterized as shortgrass prairie with representative grassland animals and plants, but diversity is enhanced by the proximity of the Front Range foothills. At higher elevations and steeper slopes on the Ranch, pine forests and mountain mahogany/antelope bitterbrush stands grow, and the area is occasionally used or visited by Rocky Mountain foothill species such as elk, mountain lion, and*



*Riparian areas, such as Lone Tree Creek (above), provide habitat to the majority of species found in Belvoir.*



*In addition to grasses, many other plants including the pincushion cactus (above) are found on the Ranch.*

#### PRINCIPLES

1. Maintain the Ranch so that it continues to function as part of the eastern Rockies and western High Plains ecosystems.
2. Protect moist riparian areas to provide habitat for Federally-listed species such as Ute ladies'-tresses orchid, Colorado butterfly plant, and Preble's meadow jumping mouse, and for Wyoming Species of Concern such as marsh felwort.
3. Preserve and restore native shortgrass prairie habitats using rotational grazing, burning, weed control, and re-seeding with native and rare species such as blue grama, buffalograss, and mountain muhly.
4. Control noxious weeds, such as cheatgrass, leafy spurge, and toadflax, using man-made (mowing, herbicide spraying) and natural (controlled burns,



## Riparian Corridors

### PURPOSE

*Lone Tree Creek, Duck Creek, Willow Creek, and Spotwood Creek are intermittent drainages that flow through the Ranch. Lone Tree Creek is the only drainage that has water for most of the year, and well-developed riparian vegetation along the creek attracts many kinds of wildlife.*



*Lone Tree Creek (above) makes up less than five percent of the Ranch, yet is habitat to eighty percent of the species found on the Ranch.*



*Aerial view of the Lone Tree Creek Corridor.*

### PRINCIPLES

1. Protect and enhance riparian vegetation to improve habitat for species such as Preble's meadow jumping mouse, Ute ladies'-tresses orchids, Colorado butterfly plant, deer, and songbirds.
2. Limit and locate development along Lone Tree Creek so that roads, trails, and other structures do not lead to trampling of riparian vegetation, compaction of soils, and erosion along the waterway. Maintain all trails at least 50 feet away from the riparian zone.
3. Preserve portions of Lone Tree Creek as completely undeveloped (no trails nearby) to provide some areas of refuge for wildlife dependent on undisturbed access to this riparian system.

## 5 SUSTAINABLE RESOURCE MANAGEMENT

### Wildlife

#### PURPOSE

*The Ranch is used by a wide variety of wildlife, especially along the Lone Tree Creek riparian zone and in The Big Hole area. Visitors may see hunting hawks and falcons, mule deer and fawns, or catch a glimpse of more rare and elusive species such as bobcats and burrowing owls.*



*Wildlife viewing opportunities include rattlesnakes. The photo above, taken on the Ranch, shows a rattlesnake that recently fed on a rodent.*



*Birding opportunities include the red-winged blackbird (above) and a ground nest (below).*

#### PRINCIPLES

1. Designate wildlife watching areas where visitors are more likely to see a variety of wildlife, but locate these where animals and their habitat will not be disturbed.
2. Provide information to educate the public about species on the Ranch, important aspects of habitat, and conservation issues.
3. Protect/enhance wildlife habitat such as riparian vegetation, nest structures, and shrub habitat to attract a variety of wildlife.
4. Consider wildlife migration corridors as part of the planning process. Connectivity to adjacent open space is important to enhance movement, maintain habitat, food sources, and reduce mortality due to auto collisions.
5. Maintain standing dead and down cottonwood and willow trees to provide habitat.
6. Identify and manage for habitat enhancement needs, i.e. noxious weed removal, riparian habitat improvement, and cottonwood regeneration.

## Big Game

### PURPOSE

*Big game species including pronghorn, mule deer, white-tailed deer, and elk commonly use the Ranch and provide for wildlife viewing and hunting opportunities.*



*Big game found on Belvoir Ranch include mule deer.*



*Elk can be found in The Big Hole.*

### PRINCIPLES

1. Guide the public to good places to view big game, provide education/interpretive materials and signage about big game ecology, life cycles, role of hunting and predators.
2. Construct new fencing in a wildlife-friendly manner so big game movement through the Ranch is not impeded.
3. Maintain hunting opportunities.
4. Manage hunting access to avoid conflicts and dangerous situations with other recreation uses by seasonal trail or area closures.
5. Rejuvenate mountain mahogany/antelope bitterbrush stands that have been depleted by heavy browsing and drought. Replanting with seedlings may be needed to replenish stands with new plants.



## 5 SUSTAINABLE RESOURCE MANAGEMENT

# Threatened, Endangered, and Sensitive Species

### PURPOSE

*The Ranch contains suitable habitat for three Federally-listed species: Preble's meadow jumping mouse, Ute ladies'-tresses orchid, and Colorado butterfly plant. The Ranch could be an important place of refuge for these and other sensitive species.*



*Ute ladies'-tresses, Colorado butterfly plant, and Preble's meadow jumping mouse are supported by riparian habitats such as found along Lone Tree Creek.*



*Many raptor species can be found on the Belvoir, including golden eagles which nest on the Ranch.*

### PRINCIPLES

1. Protect and enhance densely vegetated riparian habitat for Preble's meadow jumping mouse.
2. Protect and enhance open, grassy wetlands for Ute ladies'-tresses orchids and Colorado butterfly plant.
3. Avoid spraying and mowing in sensitive species' habitat during times of the year that are critical for their life cycle, but recognize that some spraying or mechanical management is useful to control noxious weeds and maintain suitable habitat.
4. Cooperate with U.S. Fish & Wildlife Service, Wyoming Department of Game & Fish, The Nature Conservancy, and Colorado partners to manage Ranch land for the benefit of wildlife and habitat.
5. Continue cooperation with the U.S. Fish & Wildlife Service on the 200-acre Wildlife Extension Agreement for Colorado butterfly plant by protecting the plant and habitat and allowing yearly surveys, thereby preventing designation of critical habitat along Lone Tree Creek in the Ranch.
6. Protect the golden eagle's nest by suspending construction activities that potentially disturb nesting eagles during the nesting season (February 1 to August 31). Avoid human activity within ¼ mile of any known nest during the nesting season.
7. If present, raptor nests should be surveyed prior to construction. If active, it is recommended that no new activities take place within ¼ to ½ mile of the active nest, depending on the species.

## Geology

### PURPOSE

*Geological features in the Ranch have been shaped largely by processes erosive of wind and water. These features help to define the site's unique character and provide significant scenic views and interpretive opportunities.*



*Red soils create a dramatic view into The Big Hole.*



*Scenic rock outcrops along drainage ways could be the backdrop for various recreational activities.*

### PRINCIPLES

1. Respect key natural features, including bluffs, ridgelines, escarpments, major drainage features, rock outcroppings, valley walks and other scenic geologic features.
2. Restrict hiking and climbing on the eroded edge of 'The Gangplank' on the northwest part of the Ranch which features cliffs and rock outcrops where golden eagles have their nest.
3. Maintain vegetative cover or apply appropriate erosion controls to protect gravelly and sandy soils susceptible to wind and water erosion.
4. Respect the historic geologic value of the exposed pre-Cambrian granite, on the west side of the Ranch, that is the backbone of the Laramie Range. This pink granite is 1.4 billion years old and is similar to the granite that forms Pike's Peak in Colorado. Quarries on the northwest side of the Ranch mine the granite to make crushed aggregate used in railroad and highway construction.

## 5 SUSTAINABLE RESOURCE MANAGEMENT

### Visual Quality

#### PURPOSE

*Maintaining the visual quality of the mixed-grass prairie and rolling hills characteristic of Wyoming, as well as views to adjacent mountains and canyons, will be important in preserving the Ranch's unique experience.*



*A dramatic view looking south towards Rocky Mountain National Park from Belvoir Ranch.*



*Grand views looking south from The Big Hole Rim and into Colorado beyond.*

#### PRINCIPLES

1. Maintain distinctive viewsheds into and out of the Ranch, i.e. views to Rocky Mountain National Park, views to The Big Hole, to the mountain range to the west and open rangeland.
2. Maintain visual quality from The Big Hole to the north into the Ranch with development setbacks along the rim.
3. Visually integrate buildings and facilities into the landscape so as not to interfere with significant views. Where elements are proposed to be sited along ridgelines, ensure that they are not visible from major viewpoints along the road, or from major proposed activity centers.
4. Cluster development using historic, small scale development patterns to preserve the feeling of openness.
5. Limit development of gateway services and amenities to the I-80/Otto Road corridor.
6. Design plantings to correspond to the natural character of the landscape and ecosystem or historic planting patterns. Locate trees along riparian corridors or in windrows near development.
7. Restrict billboards along I-80 and massive signage along perimeter roads to preserve scenic views.



## Connected Regional Open Space

### PURPOSE

*Belvoir Ranch is an opportunity to create a regional open space while providing a balance between recreation and preserving natural, cultural, and scenic resources.*



*Scenic view of The Big Hole looking south along the Front Range. The Big Hole has the most dramatic topographic features on the Ranch*



*Open space has an intrinsic value as well as economic value to the City of Cheyenne and its residents.*

### PRINCIPLES

1. Plan, develop, and manage the City and State land parcels comprising Belvoir Ranch as one contiguous 22,200 acre parcel.
2. Consider land acquisitions and trades to increase connections to adjacent open space.
3. Organize visitor experiences to emphasize the transition from rolling prairie to the Southern Laramie Foothills. Collaborate with the Laramie Foothills - Mountain to Plains Project within the Ranch perimeter.
4. Collaborate with local and adjacent agencies for regional open space management and planning.

## 5 SUSTAINABLE RESOURCE MANAGEMENT

### Water Resources

#### PURPOSE

*The purchase of Belvoir Ranch was partially funded by The City of Cheyenne Board of Public Utilities to expand the City's water supply and make it less vulnerable to droughts and impacts caused by climate change. Developing water resources on the Ranch also has great potential for potable water and recreation uses.*



*An artesian well located on the Ranch.*



*Former railroad reservoir used to supply water for steam trains.*

#### PRINCIPLES

1. Develop municipal water supply sustainably to avoid degrading wetland/riparian ecosystems.
2. Place new well development near existing roads and infrastructure when possible to reduce habitat disturbances and site erosion. Interconnect wells with roads that respond to topography and site conditions.
3. Develop surface water features that support multiple recreation activities.
4. Create water bodies with edges reflecting the existing topographic contours and natural water courses.

## Sustainable Facilities Development

Belvoir Ranch was purchased to address Cheyenne's water and waste management needs, and to provide opportunities for compatible public uses. These might include recreation, but could also include compatible development that generates revenue for the City that might offset some of the costs of developing recreation facilities.

In visioning sessions with community residents, a variety of lower-impact recreation uses were suggested. Some of the most popular included hiking, biking, and horseback riding; camping; fishing; golfing on a "links" (largely native turf) course; and educational activities. A visitor center and/or education center were suggested, as well as smaller-scale convenience retail — similar to those found at gateway villages outside national parks — that serves visitors' needs.

The presence of the University of Wyoming, and a thriving business community, suggest other possible uses, including a small-scale research campus that might support agricultural or archaeological study, or a retreat center that might be used for corporate off-site meetings or special events.

Other suggested uses, and corresponding facilities, include energy development, possibly through the installation of solar panels or wind turbines.

Careful attention to the design of these facilities can make them significant community assets and a point of pride for Cheyenne residents. Well-designed facilities that complement the properties' natural qualities, will demonstrate Cheyenne's commitment to quality and authenticity. This section offers design principles that will help to make facilities sustainable and consistent with the inherent character of the site.

### WHY ARE THESE PRINCIPLES IMPORTANT?

- ✦ *The "built environment" — visitor centers, campgrounds, picnic areas, interpretive displays — will shape visitors' experiences of Belvoir Ranch and The Big Hole, and demonstrate the City's commitment to a high-quality experience.*
- ✦ *Facilities are also an important opportunity to give visitors a "proud and positive" image of Cheyenne.*
- ✦ *Cheyenne has a long and storied heritage, that includes ranching, the birth of transcontinental rail and roadway systems, and the military. Through inspired design of facilities, this heritage can be communicated to visitors.*
- ✦ *Through sensitive design, the ranch can remain a "working landscape," supporting compatible, revenue-producing activities that do not impact the natural landscape or visitor experience.*
- ✦ *Through careful attention to materials and construction methods, the City can demonstrate its commitment to low-impact, "green" development.*





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## Recreational Opportunities

### PURPOSE

*At 22,200 acres, including state inholdings, the Ranch can support a variety of recreational uses while enriching the public's understanding of the value of open space to the community's quality of life and economic competitiveness.*



*Belvoir's large acreage offers opportunity for open space-oriented recreational uses including horseback riding.*



*A links golf course is a possible recreational use at Belvoir Ranch.*

### PRINCIPLES

1. Provide recreation opportunities for a variety of ages, and ability groups. The area's fastest growing age group is 45 to 64, according to the *Laramie County Comprehensive Plan*.
2. Create trail linkages to adjacent open space areas, and bicycle greenway linkages to city trail systems, where possible.
3. Organize hiking trails around destinations, such as The Big Hole.
4. Consider the impact of dogs on wildlife and ranching operations, and restrict access to designated areas and require dogs to be on-leash.
5. Develop a range of open space-oriented recreation uses that could include walking, jogging, trail running, hiking, horseback riding, mountain biking, hunting, camping and nature observation.
6. Provide winter access for cross-country skiing, snow shoeing, and sledding originating at the year-round Warren Access.

## 5 SUSTAINABLE FACILITIES DEVELOPMENT

### Architectural Features

#### PURPOSE

*Facilities include the elements of the built environment that support use, enjoyment, and interpretation of the Ranch; these can include visitor centers, interpretive shelters, warming huts, restroom enclosures, kiosks, picnic shelters and other elements.*



*The architectural character of buildings and structures should support the surrounding environment.*



*Facilities include interpretive kiosks and restroom enclosures.*

#### PRINCIPLES

1. Architectural elements should be designed to be compatible with, and reflect, the site's heritage, except as provided below.
2. Materials and technology should be sustainable and reflect "green building" principles. Structures should be sited where feasible to take advantage of solar aspect.
3. Facilities should be designed to minimize life-cycle costs, including maintenance and capital repair/replacement.
4. Contemporary facilities may be integrated into the site at locations removed from a well-defined historic context.
5. Facilities shall be sited so as not to intrude on the natural landscape, including significant view corridors, ridgelines, or prominent overlooks.
6. Scale and massing of facilities shall be consistent with the historic "texture" of the landscape.
7. Minimize lighting to basic user safety consistent with the Dark Sky Initiative. Primitive/backcountry areas shall not be lit. Lighting shall only be on during activity periods, not dusk to dawn, except in areas with 24-hour use.
8. Utilize a xeriscape plant palette to minimize water use, create a quality appearance and complement the high prairie ecosystem.



## Education/Interpretive Opportunities

### PURPOSE

*Belvoir Ranch has diverse opportunities to enhance visitors' understanding and appreciation of its many resources through education and interpretation.*



*Interpretation opportunities at a Visitor Center/Interpretive Center.*



*Interpretation and educational opportunities include guided hikes and self-guided tours*

### PRINCIPLES

1. Include signage to enhance visitor understanding and appreciation of Belvoir Ranch's prehistoric, historic and natural resources.
2. Utilize the Ranch where feasible as field research location for colleges and universities to conduct wildlife, ecological, agricultural, and traditional and alternative energy studies.
3. Promote the Ranch as an on-site, hands-on outdoor classroom for K through 12 and university level education.
4. Provide multiple opportunities for education and interpretation. These might include:
  - A Visitor Center/Interpretive Center/Museum
  - Signs or kiosks at points of interest, at trailheads and along trails
  - Guided tours/self guided tours
  - Educational programs
  - Brochures
  - Website-based opportunities

## Gateways, Districts, Corridors and Landmarks

### PURPOSE

*Gateways, Districts, Corridors and Landmarks work together to define special activity zones at Belvoir Ranch. Careful design of each of these elements will help to maintain the Ranch identity.*



*Ranch gateway could provide a unique identity and landmark at the entrance.*



*Ranch gateway village architectural character could be similar to an old western town.*

### PRINCIPLES

1. Identify and create notable Ranch gateways that welcome visitors to the Ranch.
2. Create a thematic image consistent for all Ranch gateways that supports Belvoir's unique identity.
3. Gateway buildings should present and shape positive impressions about the community and support the notion of 'sense of place'.
4. Nodes and districts are the key Ranch destinations. Identify the sublime character unique to each district and maximize the user's enjoyment.
5. Circulation corridors are the connective infrastructure that guides visitors to various areas within the Ranch. The alignment and sensitive integration of circulation enhances a visitor's experience. Sequencing of vistas, speed, special experience, nodes and districts enrich the visit. Create roads and trails that reflect these qualities.

# Signage

## PURPOSE

*Different types of signage should be provided throughout trail and open space areas to welcome users, establish an identity, aid in wayfinding, and provide warnings or regulations.*



*Interpretation sign*



*Wayfinding mile marker*

## PRINCIPLES

1. Create a unified, site-specific signage system for “branding” the Ranch development. The system shall incorporate ranch character, theme, colors and other design elements to create a unique easily recognizable environmental graphic.
2. Minimize the potential for “visual clutter” that could diminish and impair the scenic quality of the property, by creating a “family” of sign types that convey multiple layers of information.
3. Describe and interpret the unique cultural, historical and natural features of the Ranch using informative signage placed at strategic locations and along trails.
4. Make users aware of the rules and laws in force on the Ranch with a consistent message about the importance of compliance.
5. Guide visitors throughout the Ranch with clear and concise wayfinding signs.
6. Enrich trail user experience by providing mile-markers helping inexperienced users stay within their abilities, and allowing more advanced users to track time and distance traveled.



## Power Lines And Other Utilities

### PURPOSE

*The sense of openness and natural qualities of Belvoir Ranch should be preserved through careful and sensitive siting of utility corridors.*



Gravel road and cattle guard at Belvoir Ranch.



Existing energy infrastructure on the Ranch include pipelines and transmission lines.

### PRINCIPLES

1. Maintain distinctive viewsheds into and out of Belvoir Ranch by placing infrastructure (such as transmission lines) outside of these viewsheds, ideally underground.
2. Minimize disturbances by minimizing road development, siting new infrastructure on existing disturbance corridors or along existing roads to extent possible.
3. Reclaim and revegetate disturbed lands as soon as possible after utilities are installed.
4. Avoid development in sensitive habitats and wetland/riparian corridors to the extent possible. When crossing sensitive habitats or wetland/riparian corridor, cross perpendicular or create the least amount of disturbances when possible.
5. Align fire breaks to follow topographic contours to minimize visual impact and reduce erosion.

## Resource Development

### PURPOSE

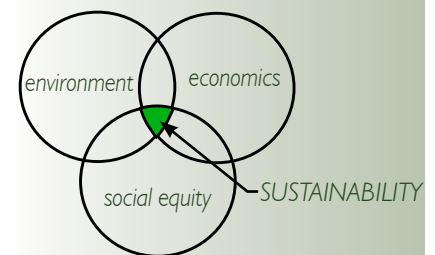
*Belvoir Ranch is part of Wyoming's working landscape. The Ranch can serve multiple economic development roles. As an open space and recreation amenity for Cheyenne area residents, it increases the attractiveness of Cheyenne as a place to live and work. Additionally, it has the potential for significant natural resource development.*



Windpower, a renewable resource, is a viable revenue generating alternative for the Ranch. One section of land, 640 acres, can produce enough energy to power 500 homes.



Festivals, such as archery competitions, could generate revenue for the Ranch.



Environmental stewardship is a balance between the environment, economics, and social equity.

### PRINCIPLES

1. Provide areas for sensitive development of low-impact uses that generate significant revenue for the City – such as solar or wind generated electricity.
2. Place revenue-generating activities in ways that respect key natural and scenic values that preserves open space quality on the Ranch and in abutting Colorado public land holdings.
3. Re-invest resource generated revenue in the Ranch to help fund improvements, operations, and maintenance costs.
4. Manage careful development of Ranch resources in a way that balances the quality of open space and recreation opportunities, revenue and service needs of the community, and environmental stewardship.



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## Access and Circulation

Given the vastness of Belvoir Ranch and The Big Hole, how can we enable visitors to appreciate their diverse and unique qualities?

While activities will likely be clustered in selected zones or nodes, roadway and trail connections within and between these nodes will be very important, both for visitors with only a short amount of time to spend, who want to maximize their enjoyment of the area, and for those visitors who might be seeking a multi-day backcountry experience.

Good roadway design can support positive visitor experiences — not only in offering safe and convenient access, but in guiding visitors to spectacular views, to places where they can usually see wildlife, or to other places that are photo opportunities. Good roadway design can also minimize impacts on the environment, reducing the possibility that visitors will stray from the designated route and create their own travelways through fragile landscapes.

Good trail design is equally important. Some visitors will be looking for short loop walks, close to major attractions. Others may appreciate longer hiking or biking loops, or trails specifically for horses. Still others may be drawn by special facilities, like a mountain bike park.

Good trail design principles will help to make visitor experiences enjoyable and minimize the chances that they will venture “off the beaten path” to create social trails that can scar the landscape and increase erosion hazards.

This section illustrates key design principles that address access and circulation.

### WHY ARE THESE PRINCIPLES IMPORTANT?

- ✦ *Gateways into the Belvoir Ranch and The Big Hole properties will shape visitors' very first impressions and experiences; if well-designed, they can convey a “sense of place” and reveal the history of the area.*
- ✦ *Some visitors may not have the time, or be physically able, to explore Belvoir Ranch and The Big Hole on foot, bike, or horseback. Well-designed roadways, with overlooks that provide for “photo moments,” will help those who see the site by car to have a wonderful experience.*
- ✦ *Roadways can also be designed to be environmentally and economically sustainable, minimizing ambient dust and recurring maintenance costs.*
- ✦ *Trail experiences that meet the needs of a variety of users — from young families with children in strollers, to backcountry hikers seeking a multi-day wilderness experience — can help to maximize use and enjoyment of the properties.*



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## External Access Points

### PURPOSE

Carefully designed access points can help to protect the ranch's natural features, by controlling and managing public access so that it does not exceed the ranch's carrying capacity.



*Borie Fields overpass - requires obtaining public access easements and bridge reconstruction*



*Missile site - controlled access for selected uses*

### PRINCIPLES

Establish the following perimeter entry points:

1. **Warren Access** - This will serve as the primary public entry point at the Belvoir Gateway Village, and could provide access for trucks traveling to the potential landfill site.
2. **The Rock Quarry** - This secondary entrance could provide public vehicular access to The Big Hole, if suitable access easements are acquired. It may be gated during the winter.
3. **Eastern Edge** - In the long-term vision for the site, a secondary public access point is also desired at Borie Fields or an alternative entry point on the eastern edge of the site. The feasibility of a new publicly accessible railroad bridge or a new roadway heading west from I-25 shall be explored.
4. **Missile Site** – This limited access/controlled entrance shall be gated, with public access permitted for organized events. Ranch and City maintenance operations will continue to have full use of this entrance.
5. **Borie and Borie Fields** – Existing entrances shall be limited to Ranch, City, railroad and utility vehicles only. Public access will not be permitted until such time as the existing vehicular bridge is reconstructed to carry higher traffic volumes. However, interim use of the existing Borie Fields viaduct is desired for equestrian access to the Ranch headquarters from a trailhead located north of the railroad tracks.



## Internal Circulation Routes

### PURPOSE

*Internal circulation routes shall be developed to provide public access to future recreation areas, private roads for management access to revenue-generating land uses, trailheads for access to the trail system, and maintenance of existing ranch roads and two-track for agricultural operations.*



*Gated open space entrance.*



*Existing road through Rock Quarry pasture.*

### PRINCIPLES

1. **Hikers** - Provide a variety of purpose-built trails of varying lengths and difficulties to accommodate hikers of different fitness and ability levels, including ADA-accessible trails. Explore regional trail connections to the Greater Cheyenne Greenway, Curt Gowdy State Park, Soapstone and Red Mountain trails.
2. **Mountain Bikers** - Provide a mountain bike freeride park, a variety of purpose-built, moderate-distance loop trails, and explore the possibility of creating a 30+ mile "epic" ride through the Ranch.
3. **Equestrians** - Develop a stacked-loop equestrian trail system based out of the Ranch Headquarters/ Equestrian Center to accommodate 1.5- to 2.5-mile novice riders. Allow experienced riders to share trail systems with other users for longer rides. Offer an interim equestrian trail route that uses the existing Borie Fields overpass to link a northern trailhead with the Ranch Headquarters.
4. **Winter Trail Users** - Provide winter access to higher western elevations for cross-country skiing, snowshoeing and sledding.



Access for user groups includes wagon rides and horse and trailers.



Existing railroad right-of-way.

5. **Off-Road Vehicles** - Restrict the recreational use of ATVs, dirt bikes and similar motorized recreational uses from the Ranch and from accessing the UPRR right-of-way.
6. **Personal Vehicles** - Develop new internal roads for use by the general public from two entry points (Warren Access and the Rock Quarry Site). A long-term plan is to link internal roadways beginning at the Warren Access to a third entry/egress point on the eastern edge of the site.
7. **Equestrian vehicles** - Allow use of the same circulation system as other personal vehicles. Provide adequate trailer parking at equestrian trailheads.
8. **City and Ranch Operations/Maintenance-** Continue to use existing two-track roads for ranch operations and maintenance, as well as new roads constructed for public access.
9. **Railroad Operations** - Allow access to all internal Ranch roads and railroad maintenance roads. Restrict public use of and access to Union Pacific Railroad rights-of-way.
10. **General** - Implement a system of gates and cattleguards to allow movement between pastures for vehicles and trail users while containing ranch livestock.

## Roadway Design

### PURPOSE

Roadways provide access to key destinations and activity centers, accommodate scenic drives, and fulfill other mobility needs for ranch users while maintaining and respecting the area's character.



*Roads should be designed to fit the character of the landscape.*



*Existing two-track road*

### PRINCIPLES

1. Design roads to fit with the character of the landscape so that driving through Belvoir Ranch is part of the visitor experience.
2. Design internal Ranch roads for sightseeing and to provide a minimal facility serving travel between key destinations or activity centers.
3. Route roadways to minimize impacts on sensitive natural and cultural resources.
4. Maintain existing two-track roads for use by Ranch operations/maintenance and City vehicles. Construct a new dedicated road for exclusive landfill use if a landfill is developed.
5. While exact roadway design specifications will depend on levels of traffic generated by proposed land uses, general considerations include:
  - Surfacing material (paved vs. unpaved; aesthetics, maintenance, dust)
  - Signage (location, amount, and appearance)
  - Roadway width
  - Design volume, design speed, and design vehicle



## Railroad Interface

### PURPOSE

*The interface between roadways, trails, and rail lines shall be designed and managed to limit conflicts between rail cars and the public, including private motor vehicles and non-motorized trail users, thereby minimizing liability exposure.*



Existing access tunnel to The Big Hole



Grade-separated railroad crossing

### PRINCIPLES

1. Restrict public access to fire roads and UPRR rights-of-way.
2. **At-Grade Crossings** - No new at-grade railroad crossings shall be installed. Restrict the public from using existing at-grade crossings.
3. **Grade-Separated Crossings** - Use existing culverts to provide internal access across the Ranch for private vehicles and trail users. Retain the original purpose of culverts to move livestock across the rail lines. Preserve existing culverts leading off Belvoir Ranch for future movement onto adjacent properties.
4. Explore the feasibility of public vehicular access to the eastern portion of the site by constructing a new railroad overpass at Borie Fields or developing a new road to I-25.
5. **Emergency Access** - Make all portions of the site accessible by emergency responders. In addition to the designated tunnel crossings, provide at-grade crossings for use by larger emergency vehicles.
6. Maintain the existing at-grade crossing within Section 20 T. 13N, R. 68W, for emergency vehicle access. Similarly, the closed at-grade crossing between Sections 12 and 13 is desired to be re-opened to provide emergency access to The Big Hole.

## Trail User Experience

### PURPOSE

Quality recreational trail experiences successfully combine elements of safety (physical and perceived comfort zones), efficiency (reasonable directness) and playfulness (uneven, random integration and exploration of site elements).



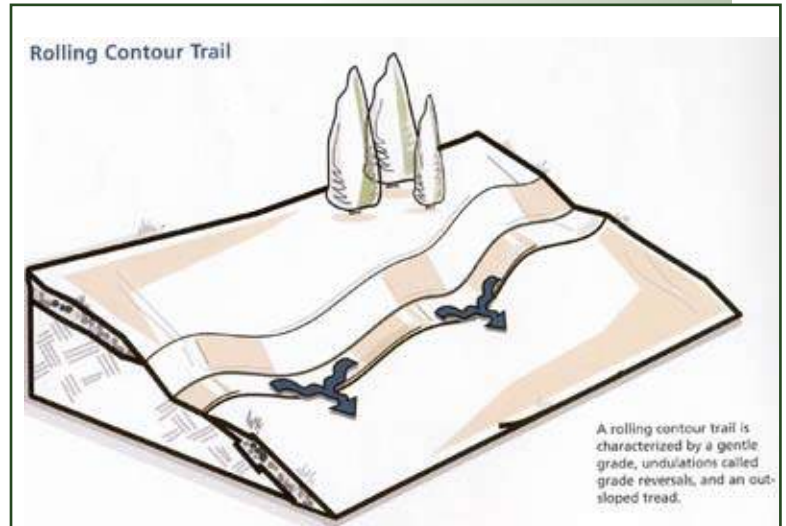
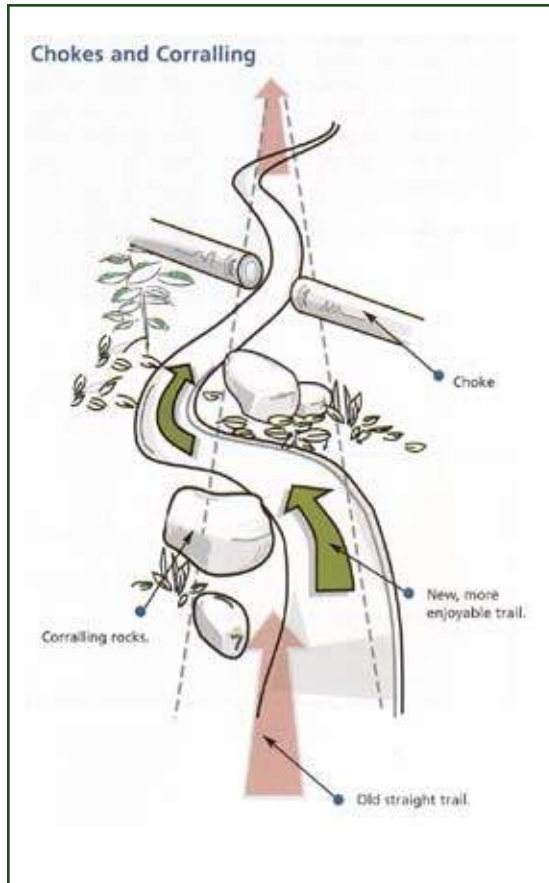
Curt Gowdy trail using chokes and corralling to slow users and provide visual interest.  
(photo courtesy of Kevin Rokke)



Much of the feeling of a trail comes from how it relates to site edges. Being on an edge, one experiences the realms on both sides.

### PRINCIPLES

1. Consider human feelings. Trails should “feel” good by being in tune with both the user and the site. Routes on existing roads and two-tracks do little to enhance user experience.
2. The Ranch can be divided into two main categories - frontcountry and backcountry - depending on the extent of development and ease of access to the area. Each presents varying degrees of safety, interaction, solitude and challenge.
  - **Frontcountry Trails** - Develop a system of natural surface trails within close proximity to motor vehicle access. Include interpretive exhibits. Design for moderate probability of encounters with other trail users.
  - **Backcountry Trails** - Develop a system of primitive natural surface trails extending 3+ miles from trailheads. Provide opportunities for solitude and discovery. Minimize signs of human influence.



(Illustrations from IMBA Trail Solutions)

## DESIGN PRINCIPLES FOR NATURAL SURFACE TRAILS

1. Use **rolling contour trails** to minimize erosion and create a more engaging route.
2. Use an interconnected, **stacked loop** trail network to avoid dead ends, provide multiple route options, accommodate various user types, and enhance enjoyment.
3. Use **chokes, corrals and turns** to create a more exciting or challenging route and slow users in potential conflict areas.
4. Use **anchors, edges and gateways** to give trail users a reason to be “here” instead of “there” and to create points of attraction.
5. Create a **sequential experience** to create a sense of passage and distance. Use trail design and routing to highlight changes in the landscape and other notable features.
6. Route paths to **positive control points** (scenic vistas, unique vegetation, or historic, cultural, and archaeological sites) to minimize social trails and enhance the user experience.
7. Follow a **natural shape** when routing trails. Do not “design” trails to be straight, curved or curvilinear, but rather relate them to the natural environments they traverse.



## Sustainable Trail Design

### PURPOSE

*Sustainable trail design can protect the environment, minimize maintenance and meet the needs of trails users. While erosion is a natural force that can destroy trails and damage the environment, we cannot control it, but rather should shape the trail context to limit how much erosion can occur.*



*Trail is contoured to avoid steep grades and minimize erosion.  
(photo courtesy of Kevin Rokke)*



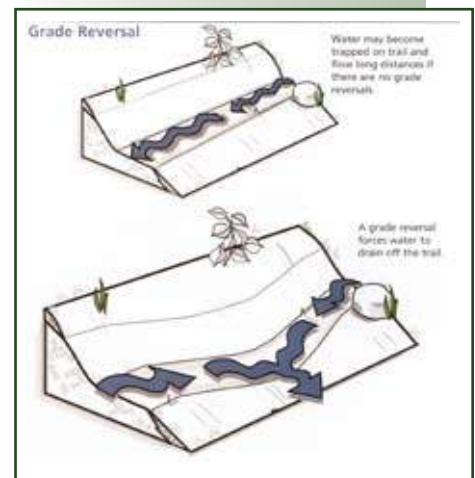
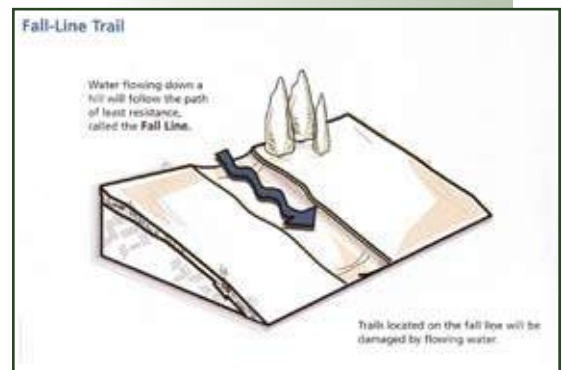
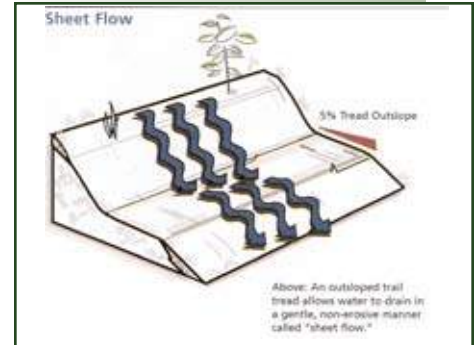
*Trail with roots exposed from erosion  
of a steep slope.*

### PRINCIPLES

1. Design purpose-built trails to minimize the opportunity for visitors to create unwanted social trails.
2. Design and route trails to reduce soil compaction, displacement and erosion caused to varying degrees by all modes of trail users. Avoid or minimize disturbances in areas with highly erodible soil.
3. Design and route trails to minimize tread watershed size. This is the only sustainable way to accommodate erosion over time.
4. Continually monitor trails. If needed, implement future measures to moderate the carrying capacity of facilities that are not capable of sustaining moderate to heavy levels of use, particularly on The Big Hole site and accessing the adjacent Colorado open space properties.

## DESIGN PRINCIPLES FOR NATURAL SURFACE TRAILS

1. **Avoid the fall line** (or the prevailing slope) when designing trails. Water naturally flows down this route, stripping trails of soil and damaging the environment.
2. **Use rolling contour trails** to minimize erosion, especially in areas with erosion-prone soil. Contour trails are characterized by a gentle grade, undulations called grade reversals, and a tread that slopes slightly downward. These features allow water to drain in thin, dispersed sheets, minimizing erosion.
3. **Don't route on steep slopes**, especially in areas with erosion-prone soil, as some soils will support steeper trail grades than others. The slope or grade along a trail should generally be less than 10% to minimize erosion, and less than 7% in areas with sandy soil. Short segments can be steeper, but maximum grade should not be exceeded for more than 100 feet.
4. **Don't route across flat lands** - Trails open to users with higher impact (e.g. equestrians) should have more gentle maximum grades; however, some grade variation is desirable for drainage and to provide interest for trail users. For this reason, flat areas should be avoided.
5. **Follow the half rule** - A trail's grade should not exceed half the grade of the hillside or sideslope it traverses.
6. **Use grade reversals** create a series of small trail watersheds and limit the length water can flow on the trail.
7. **Outslope trails** - Leave the outside edge of a hillside trail lower than the inside, allowing it to shed water.
8. **Build bench-cut trails** into the side/contour of a hill with backslope and outslope, which will allow water to move across the trail tread.
9. **Use retaining walls** made of small rocks or wood to support turning platforms, shore up trails over rough terrain, or reinforce the outer edge of a partially benched trail.
10. **Armor erodible trail sections** - Use large rocks to "pave" the trail tread on steep slopes and to create a raised surface through soft, low-lying, or wet areas.



(Illustrations from IMBA Trail Solutions)

## ADA Accessibility

### PURPOSE

A variety of trail types should be provided to accommodate different experiences and user groups. A trail's purpose should be a primary consideration in planning and design. Backcountry trails designed for challenging hikes, horseback riding or mountain biking do not need to be accessible to standards of the Americans with Disabilities Act (ADA), while frontcountry trails designed for recreational pedestrian use should meet minimum accessibility guidelines.



Surfacing materials such as asphalt and concrete are typically considered the most firm and stable.



However, some natural surfaces, such as the crusher fines trail shown above, can also be accessible.

### PRINCIPLES

- 1. Scope** - In general, not all parts of a trail system need to be accessible. Trails developed to connect outstanding natural or cultural features of a site should strive to be 100% accessible if 1/2 mile or less, or have at least 1/2 mile of the route accessible from a trailhead.
- 2. Surface** - Firmness and stability are the two major considerations for accessible trail surfaces. Firmness is a vertical measure of penetration, while stability refers to how much surface material shifts when rotated pressure is applied.
- 3.** Utilize proper construction and maintenance to ensure that surfaces remain accessible. Appropriate surfaces are not limited to paved surfaces such as asphalt and concrete.
- 4.** Many naturally occurring surfaces, such as crushed aggregate or soils containing some clay and a variety of sieve sizes are considered firm and stable.
- 5.** Surfaces that are not typically considered accessible include sand, pea gravel, mulch, woodchips, and large gravel rocks. Without proper maintenance, surfacing materials can become non-accessible.
- 6. Slope** - The cross slope (tilt) and running slope (slope in the direction of travel) on accessible trails generally should not exceed 5%.



## Trailheads and Parking

### PURPOSE

Trailheads function as gateways for users. They typically include adequate parking, a variety of amenities, and signage containing maps, destination information, trail difficulty, trail length, intended and prohibited uses, and rules and regulations.



Interpretative opportunities on the Belvoir Ranch include cultural and natural resources.



Trailheads shall be signed for appropriate and inappropriate uses.

### PRINCIPLES

1. Consider the needs of all trail users when planning/designing the trailhead and parking area (e.g. the parking lot may need to accommodate horse trailers if equestrians will be using the trail).
2. Consider parking demand and plan/design facilities for specific needs (bicycles, RVs, trailers).
3. Reflect an appropriate on-site carrying capacity through trailhead design and parking supply. If future use of Belvoir Ranch is determined to be exceeding sustainable carrying capacity, parking restrictions may be considered as a means to implement resource management.
4. Provide amenities consistent with expected use (more amenities in higher-traffic areas).
5. Consider providing a shelter with picnic tables, restrooms, trash cans, bicycle racks and other amenities at heavily used trailheads or major trail junctions.
6. Provide ADA-accessible amenities and parking area where the trailhead leads to an accessible trail.

## 5 ACCESS AND CIRCULATION

### Regional Trail Connections

#### PURPOSE

*Belvoir Ranch and The Big Hole are located in close proximity to other large open space tracts in Wyoming and Colorado. As one large interconnected regional ecosystem, these properties have many similarities. However, each also has unique attributes to consider for recreational programming and resource management.*



*Mountain biking trail system being developed in Curt Gowdy State Park  
(photo courtesy of Kevin Rokke)*



*Soapstone property*

#### PRINCIPLES

1. Consider uses for Belvoir Ranch and The Big Hole that complement uses planned and developed at surrounding sites.
2. Provide wildlife habitat connectivity between sites.
3. Use the concept of "management zones" to focus on resource stewardship while providing high quality, sustainable, non-motorized recreational opportunities.
4. Develop trails between open space sites for regional recreational uses, as appropriate and feasible for the targeted user group.

Regional connections include:

- *Greater Cheyenne Greenway, City of Cheyenne* - provides multi-use transportation and recreation opportunities on a system of 10-foot wide paved trails that link community parks and city neighborhoods. Potential connections to Belvoir Ranch across I-25 and the railroads should be explored in the vicinity of Speer Road or a new connector road to Belvoir Ranch from I-25. An 8'-10' crusher fines trail is recommended as a rural extension of the City's multi-use greenway system.



One of many rock formations in Curt Gowdy State Park (photo courtesy of Kevin Rokke)

- Curt Gowdy State Park, State of Wyoming*

  - located in combined Great Plains and Rocky Mountains habitats with hiking, equestrian and single-track mountain biking trails across low-lying meadows, gently rolling hills, upland forests, and massive granite formations. The State Park is becoming a regional mountain biking destination, therefore a purpose-built single track connection is the desired future link to Belvoir Ranch.
- Red Mountain Open Space, Larimer County, CO* - a landscape of rolling foothills and rocky outcrops interspersed with ponderosa and juniper woodlands that dramatically transforms into The Big Hole at the Wyoming state line. Resource management of this site is critical to Larimer County as part of the Mountains to Plains Project. Trails within The Big Hole should thus follow the 12 heartbeat rule, meaning groups using the site shall be restricted in size to no more than 12 heartbeats (i.e. - 6 horses with riders or 12 hikers).
- Soapstone Prairie Natural Area, City of Fort Collins, CO* - activities will include hiking, mountain biking and horseback riding on 30 miles of trails, picnicking, guided naturalist tours, and development of an extensive cultural interpretation program that includes the Lindenmeier Archaeological Site - a National Historic Landmark of the Folsom occupation. The 12 heartbeat rule also applies to this site.
- Laramie Foothills Mountains to Plains Project* - a cooperative effort of multiple partners to conserve a corridor of nearly 200,000 acres of protected lands for wildlife habitat and cultural resource preservation. While undeveloped open space and wildlife habitat are the main goals, future trail connections should be explored to provide hiking opportunities from the Wyoming border south along the Front Range of Colorado.





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## Sustainable Property Management

While most of the design principles in this handbook focus either on the “built environment,” or on stewardship of natural and cultural resources, it is equally important to provide “best practices” for management that prevent conflicts between different uses or activities, or that focus on safety and security for visitors.

The property’s large size and remoteness will pose challenges for patrolling, enforcing rules and regulations, and minimizing illegal or harmful activities, like dumping or shooting. It will also pose a challenge for first responders, in locating and transporting injured parties to medical assistance. Finally, to maintain the viability of ranching, or to protect valuable equipment, some portions of the site may need to be closed on a temporary or seasonal basis.

This final section presents “best practices” for managing the property so that safety and security objectives are met.

### WHY ARE THESE PRINCIPLES IMPORTANT?

- ✦ *Grazing is important to maintain on the property, and it will be important to minimize conflicts between grazing and other recreational uses.*
- ✦ *Portions of Belvoir Ranch are also open for hunting, and it will be important to establish management policies, including possible seasonal closures, that minimize conflicts between hunters and other visitors.*
- ✦ *Given the property's vast size, procedures will need to be established to patrol, to prevent prohibited or illegal activities.*
- ✦ *Procedures will also need to be developed for emergency responders, in the event of accidents or injuries.*



*The large size and remoteness of Belvoir Ranch will pose challenges for patrolling and enforcing rules and regulations.*



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## Public Safety and Security

### PURPOSE

*As the Belvoir Ranch develops and uses increase, various levels of security and safety will be required. Security and safety measures seamlessly integrated into the Ranch design will encourage visitation and enhance user enjoyment.*



*Supervised controlled access into some areas of Belvoir Ranch.*



*Signage includes warnings for user safety as well as rules and regulations.*

### PRINCIPLES

1. Locate facilities to provide natural surveillance for improved security. If necessary, segregate public access from incompatible uses.
2. Develop interpretive trailheads for backcountry activities that caution and inform users of possible physical and animal/reptile perils.
3. Develop and implement security management policies and programs that address theft, damage, illegal activity, illegal entry, and other concerns.
4. Establish user access zones based on duration or user management plans; 24-hour access, dawn to dusk access, restricted access by permit or fee.
5. Develop Ranch management plans to address temporary safety/supervision concerns, such as at special events or swimming areas.
6. Develop fencing/barrier systems to ensure visitors use grade separated railroad crossings.
7. Provide access by emergency responders to all portions of the site.

## Landfill

### PURPOSE

*One of the reasons for purchasing Belvoir Ranch was as a landfill site. The landfill is expected to cover 250 acres with total infrastructure utilizing up to 600 acres. If the landfill is constructed, best management practices should be employed to minimize scarring of the property, blowing trash, and ambient dust.*



*The proposed landfill location on Belvoir Ranch.*



*Landscape berms will be used to buffer views of the haul road and landfill. Berms will mimic the rolling landscape found elsewhere on the ranch, for example, at the Borie Field entrance, where this natural berm screens the railroad from view.*

### PRINCIPLES

1. Design the haul road to minimize visual and noise impacts to surrounding uses, and to the gateway ambiance, historic sites and open space quality. Use berms or other landscape elements to screen the road from view.
2. When feasible, use combustible waste as a revenue generator to increase the life of the landfill.
3. Implement a City-wide recycling program to reduce municipal solid waste, generate revenue from sale of recycled materials, decrease truck trips and increase duration of use of landfill.
4. Allow only covered vehicles to prevent and reduce blowing trash from trucks.
5. Consider future alternative uses for reclamation when landfill is capped, including alternative energy development and open space.
6. Place litter fences downwind and consider using wind breaks to reduce wind speed and turbulence upwind of the potential tipping area. Conduct regular mechanical and or hand pick up of litter

## Grazing

### PURPOSE

*Belvoir Ranch has operated as a cattle ranch since the 1870s. Intact ranches are becoming scarcer in the region and the Belvoir is considered a jewel due to its excellent grass forage and suitability for use as a yearling or cow/calf operation.*



*Cattle ranching is the historic use on Belvoir Ranch.*



*Minimize user conflicts by limiting access to pastures while cattle are using them.*

### PRINCIPLES

1. Maintain the Belvoir as a working cattle ranch.
2. Strive to limit improvements to those compatible with grazing.
3. Maintain healthy grasslands on the Belvoir through control of noxious weeds (e.g., larkspur, leafy spurge, toadflax) and quickly reclaim disturbed areas with native species to prevent establishment and spread of noxious weeds.
4. Because cattle operations are oftentimes not compatible with people, dogs, and equestrian uses, minimize conflicts by rotating cattle through Ranch pastures and restricting access to those pastures while cattle are in them.
5. Continue haying on the Belvoir to maintain water rights and supplement ranch income.
6. Replace all gates with cattle guards to prevent conflicts associated with people leaving gates open and disrupting livestock operations.
7. Provide for long-term grazing leases (e.g., 5-7 years) to prevent rangeland abuse sometimes associated with short-term leases.
8. Negotiate grazing leases that incorporate best rangeland management practices.
9. Encourage ranch management educational opportunities with regional universities.





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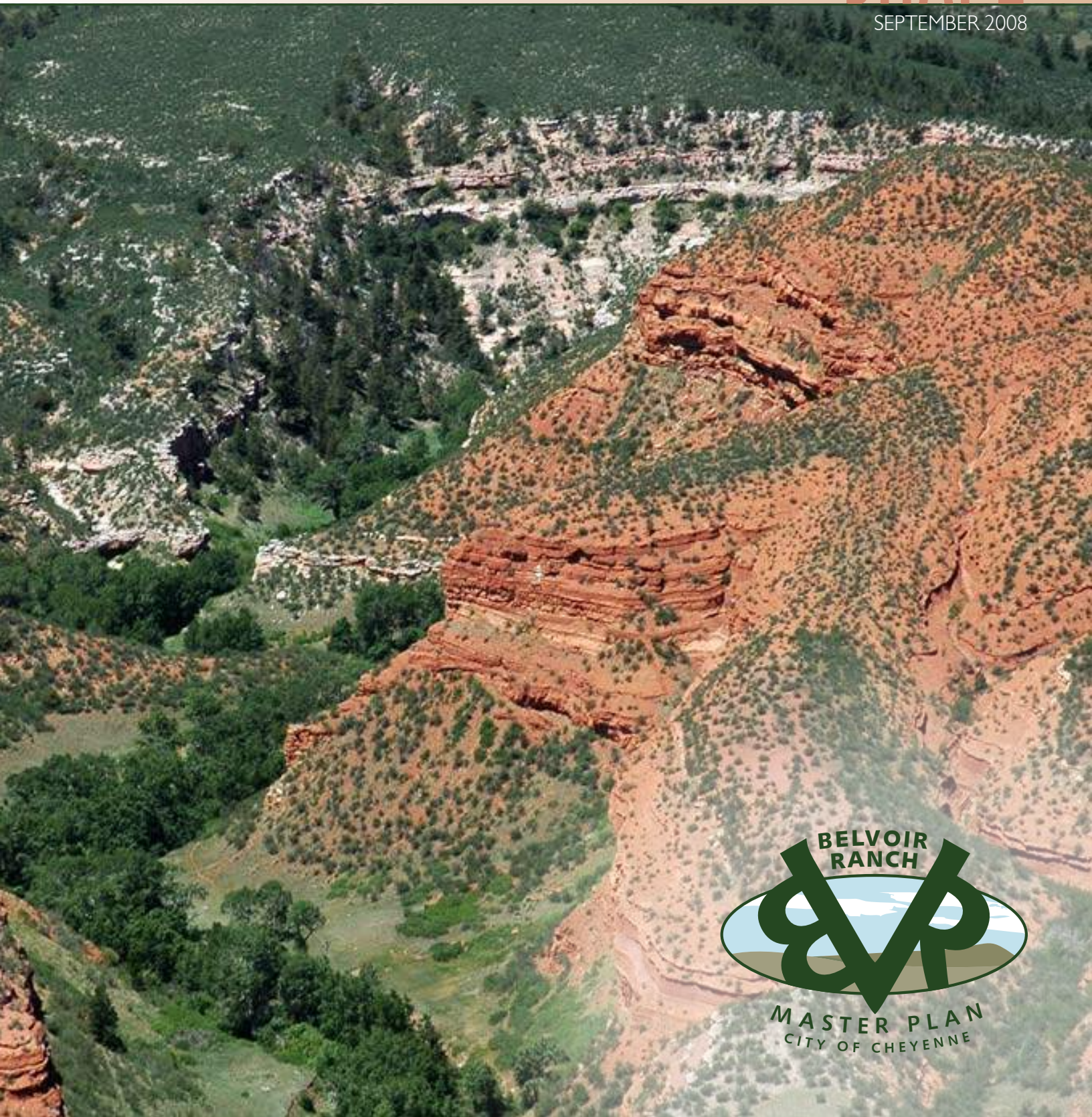






# SHAPE

SEPTEMBER 2008





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## Acknowledgements

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## Section 1: Introduction

### PURPOSE OF THIS DOCUMENT

*Shape*, the third phase of the Belvoir Ranch Master Planning process, provides a conceptual master plan for future improvements at the Ranch and Big Hole, and policies for managing the properties for the benefit of future generations.

The Master Plan identifies conceptual locations for land uses identified by the City and through the public process. The plan strives to conserve and preserve a significant open space amenity for future generations of Cheyenne residents. Creating such a plan guides and accommodates the evolving desires of the community and economic development pressures over a long period.

*Shape* builds on the existing conditions inventory and site development principles previously presented in the Plan's companion *Snapshots* and *Structure* documents. The fourth document, *Build*, describes how improvements might be phased over time, estimates capital development and operations and maintenance costs, and suggests strategies for implementation.

### PURCHASING THE BELVOIR RANCH AND THE BIG HOLE PROPERTIES

Located 16 miles west of Cheyenne, Belvoir Ranch and The Big Hole together consist of 18,800 acres with an additional 3,400 acres of land leased from the State of Wyoming.

The 2003 purchase of Belvoir Ranch was funded by the City of Cheyenne Board of Public Utilities (BOPU) to expand the City's water supply, and by the Department of Public Works, for a possible landfill site. Purchase of the Ranch property allows for expansion of the City's infrastructure as it grows, as well as for compatible recreation. Additionally, the City has



Aerial view looking south towards The Big Hole. The Big Hole Outlook Area is one of the five Ranch Development Districts which will be discussed in more detail in Section 4 of *Shape*.

identified potential economic benefit from other types of development that are compatible with the Ranch's natural features.

The Big Hole was purchased in 2005 from The Nature Conservancy, which holds a conservation easement on the property. It consists of 1,000 acres of rim property and 800 acres of spectacular red rock canyon scenery. It is part of a regional area identified as the Laramie/Foothills Mountain to Plains project, which is sponsored by Larimer County, CO, the City of Fort Collins, The Nature Conservancy, and the Legacy Land Trust.

The property will remain natural, allowing selected low-impact activities such as hiking or horseback riding. The Big Hole will be managed through a partnership between the City of Cheyenne, Larimer County, and The Nature Conservancy.



Public comment was recorded from each of the Public Meetings.

## A COMMUNITY-DRIVEN PLANNING PROCESS

The community-defined *Vision2020* established the strategic direction for the foundation for *PlanCheyenne*, the Cheyenne Area Development Plan. In keeping with previous Cheyenne planning efforts for *Vision2020* and *PlanCheyenne*, a community driven planning process was used. Cheyenne residents helped establish the land use program elements and guided their final location on the Master Development Plan. All suggested visitor experiences and land uses presented by the public were carefully considered and evaluated for compatibility with the Vision for the Ranch.

The goal of opening Belvoir Ranch to the citizens of Cheyenne and the general public is to allow them to recreate, appreciate, and contemplate the heritage of the region that is ingrained into the landscape and makes Cheyenne unique.



Potential land use and recreational opportunities were evaluated with a dot-voting exercise at a public meeting.

## HOW TO USE THIS DOCUMENT

This document includes the following sections:

- The ***Vision for Stewardship of Belvoir Ranch and The Big Hole*** section establishes an overarching framework for the Master Development Plan;
- ***Ranch Master Plan Elements*** summarizes key components of the Plan, including access and circulation, recreational activities, trails and trailheads, parking, conservation elements, ranching, water resources, energy development, and educational opportunities.
- The ***Ranch Development Districts*** section provides additional detail on potential activities that might be offered in each zone. The sidebars and enlargement maps provide a quick way for readers to easily grasp the essence of proposed improvements.
- ***Sustainable Stewardship: Policies for Managing Belvoir Ranch*** provides guidelines for “adaptive management” of public use on the Ranch, as well as the Ranch landscape and property itself.
- Finally, ***Land Acquisition*** provides guidance for future potential expansion of the ranch property.



Consultants presented site opportunities and constraints to citizens at a public meeting.



## Section 2: A Vision for Stewardship of Belvoir Ranch and the Big Hole



Wildflowers overlooking Lone Tree Creek; The Big Hole;  
Cattle drinking in an existing reservoir; Ranch Headquarters  
with the City of Cheyenne in the distance.

### A VISION FOR STEWARDSHIP OF BELVOIR RANCH AND THE BIG HOLE

The community's vision for Belvoir Ranch and The Big Hole is an enduring statement about the value and significance of these properties and how they should be preserved and managed. It is a statement about a desired future, that should inspire and motivate, even though fully realizing the vision may take many years.

Finally, a good vision statement is inclusive, flexible enough to support many ideas and points of view. The Cheyenne community's vision for Belvoir Ranch is summarized in the box to the right.

#### A Vision For The Belvoir Ranch

*Belvoir Ranch is a unique and significant piece of Cheyenne's rich cultural heritage and regional open space system.*

*To be responsible stewards of the land, City of Cheyenne and the Board of Public Utilities are seeking to manage it as a sustainable "working landscape" that contributes to the area's economy and its quality of life.*

*The Ranch shall be managed as a community asset and legacy, balancing uses and resources in such a way as to sustain its unique landscape character and heritage, for generations to come.*







*Aerial view of Lone Tree Creek*



*The Ranch provides abundant bird viewing opportunities.*

## CORE DESIGN PRINCIPLES

The vision for stewardship is supported by detailed design principles that are presented in *Structure*, and by a series of policies for managing resources and public use that are presented later in this document. Core design principles are summarized below.

### Principle 1

*Minimize new disturbance to the site and landscape.*

- ✦ “*Tread lightly on the land*” is a core precept guiding any future development at Belvoir Ranch and The Big Hole. The community is supportive of low-impact activities that do not mar the inherent qualities of the properties. The City and State lands comprising the properties will be planned and managed as one contiguous, 23,600-acre parcel, subject to State Land Board requirements described later in this document.

### Principle 2

*Preserve and protect key natural features and habitat.*

- ✦ The properties’ natural features — the rolling high prairie and red rock canyon, long views to the mountains, creeks and draws, big game and small mammals, birds of prey and songbirds — are the many reasons that they are so beloved by Cheyenne residents. It is important that they be protected and preserved for the enjoyment of future generations. To support this objective, a permanent land use plan will be negotiated with The Nature Conservancy to provide recreational access to The Big Hole, and the properties will be planned and managed in concert with the adjacent Red Mountain Open Space and Soapstone Prairie Natural Area.

### Principle 3

*Protect, enhance and interpret natural and cultural resources.*

- ✦ Once these resources are degraded or lost, they cannot be readily, if ever, replaced.

**Principle 4**

*Make education and interpretation a key component of Ranch activity.*

- ★ Interpretive signage, programs, and permanent facilities, such as a Cheyenne Legacy Museum/Mountain to Plains Interpretive Center, can tell the story of the properties' pre-historical, historical, and contemporary cultural heritage and regional ecosystem.

**Principle 5**

*Provide for compatible public use, both in activities and in intensity of use, that does not overwhelm the properties' essential features and qualities.*

- ★ Belvoir Ranch was acquired to support multiple objectives, including fulfilling Cheyenne's future water needs, and possibly its solid waste management requirements. These functions are provided for in the plan, along with compatible recreational opportunities and possibilities for "green" energy generation. Grazing, an essential feature of the Ranch since 1874, will remain a vital component of the landscape.

**Principle 6**

*Design facilities using sustainable, "green building" principles.*

- ★ The "built environment" — visitor centers, campgrounds, picnic areas, interpretive displays, and the like — will shape visitors' experiences of Belvoir Ranch and The Big Hole, and demonstrate the City's commitment to a high-quality experience. Through careful attention to materials and construction methods, the City can also demonstrate its commitment to low-impact, "green" development.

**Principle 7**

*Implement improvements that are economically sustainable.*

- ★ While the tendency is often to equate sustainability with environmental objectives alone, economics — particularly maintenance and capital repair/replacement costs — are also important considerations.



Ponnequin Wind Farm southeast of The Belvoir Ranch



Missile Silos on the Ranch are a significant part of its Cold War history.



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## Section 3: Ranch Master Plan Elements

### INTRODUCTION TO THE BELVOIR RANCH MASTER DEVELOPMENT PLAN

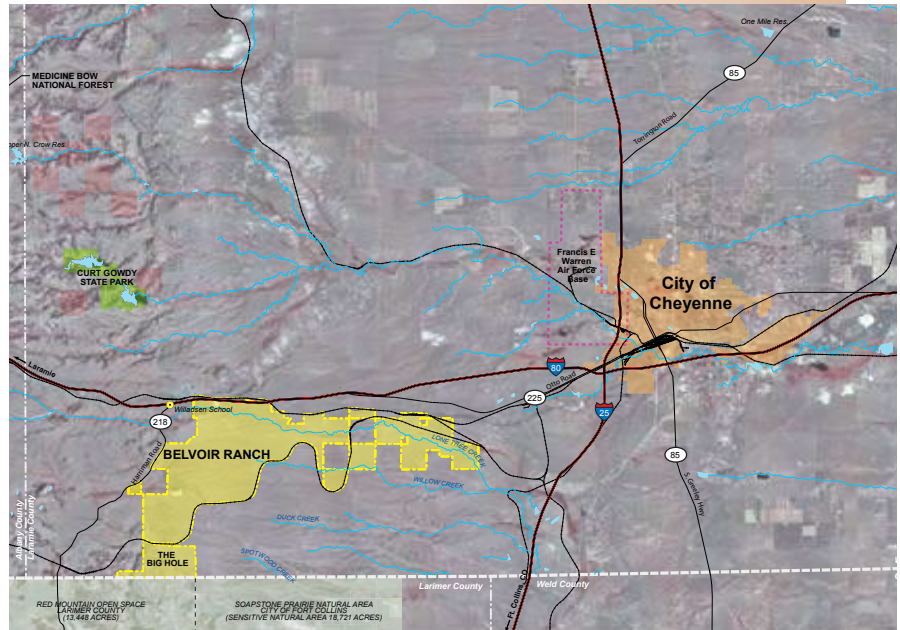
Belvoir Ranch is a spectacular and vast property, significantly larger than the land incorporated within the City of Cheyenne municipal boundaries. Undeveloped public high prairie open space that comprises the Ranch is truly unique. It is an exciting opportunity that few other municipalities share.

The Board of Public Utilities (BOPU) was instrumental in the acquisition of Belvoir Ranch for the development of sub-surface water resources for the City of Cheyenne. The BOPU supports water management on the Ranch for scenic, recreation, and municipal water supply.

The Plan offers a framework for the City and public to use as a tool to establish and implement visitor experience preferences over the future decades. Two development phasing plans, a 5-year and 15-year, will be presented in **Build**. They will show what could be developed within those periods.

Implementation of the Master Development Plan for the Ranch will be based on user studies to establish visitor expectation levels and hierarchy for phasing construction. Implementation shall also include cooperative planning with regional recreation agencies: Curt Gowdy State Park and Medicine Bow State Park/ Veedauwoo, to develop complementary facilities to create a wider variety of activities for users and a regional destination for selected activities such as mountain biking, hiking, horseback riding and rock climbing (scrambling).

The following sections address the Master Development Plan in detail.



*Belvoir Ranch is significantly larger than the land incorporated within the City of Cheyenne.*

## SUMMARY OF THE MASTER DEVELOPMENT PLAN

The Master Development Plan map illustrates proposals for possible future activities at the Ranch and The Big Hole. They include:

- The proposed locations for future water supply lines and wells to address City needs, as well as the site and access road for a possible landfill.
- Recreational activities, including fishing, swimming, hiking, biking, horseback riding, camping (RV, tent, and primitive backcountry sites), a links-style golf course, a freeride mountain bike park, frisbee golf, and archery practice areas.
- Special events, which could be staged at the former missile silo site or at a new Retreat/Conference Center.
- Educational opportunities, offered at a potential Visitor Center, through interpretive exhibits within each development district, or through special activities like chuckwagon or trail rides or guided tours.
- Reservoir storage for Cheyenne's water supply; reservoirs could also provide for passive recreational use, like fishing and swimming.
- Opportunities for continued ranching and grazing, to maintain the site's heritage as a "working landscape."
- Opportunities for possible wind energy and/or solar power generation.

These facilities are reached from four primary access roads, including Belvoir Road, which traverses the site, and three secondary, controlled access roads that terminate at specific activity areas. A network of short- and long-loop trails, provides opportunities for novice and experienced hikers, bicyclists, and horseback riders.

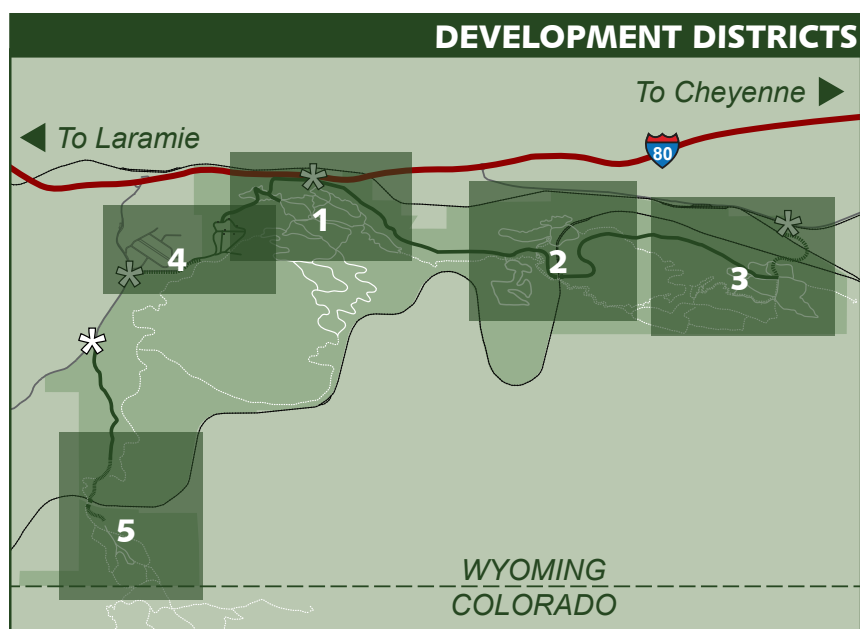
These proposals were developed and reviewed with extensive public and stakeholder input. A number of additional proposals were also considered and, for reasons noted below, deemed as not appropriate for inclusion at this time.

- Active sports, such as a skatepark, paintball course, horse race track, or BMX track, were viewed as incompatible with site character.
- Venues for large-scale special events, such as a rodeo or air show, were viewed as being located too far from the City's population center to be suitable.
- Motorized vehicle courses, for ATVs and moto-cross, for example, were also deemed as incompatible with the site's character and could possibly result in permanent degradation to the landscape. (Policies governing motorized use are discussed extensively in Section 5 of this document.)

- A suggested business park along I-80, considered as infeasible because of topographic and roadway access constraints.
- Suggested housing along I-80, considered infeasible due to the distance from major population centers and lack of services.
- Biofuel production, viewed as infeasible due to water requirements and unsuitability of soils to support suitable plants.
- A coal-fired power plant, considered but public opinion was much more strongly in favor of “green energy” production, from an environmental standpoint.

Belvoir Ranch and The Big Hole have been planned as five discrete activity areas, shown on the key map below, and discussed further in Section 4.

1. **The Belvoir Gateway Village** serves as the gateway into the Ranch. It is the most intensely developed zone and will accommodate a large volume of visitors with a high level of service.
2. **The West Reservoir Area** will be developed as a family-oriented water-related activity area.
3. **Belvoir Meadows** is envisioned as a family-oriented animal-related activity area.
4. **The Missile Site** could provide a future venue to stage special events and educational opportunities, or with extensive renovation could become an Air Force Museum,...
5. **The Big Hole Gateway and Rim** will remain rustic, offering opportunities for hiking, horseback riding, and scenic viewing.



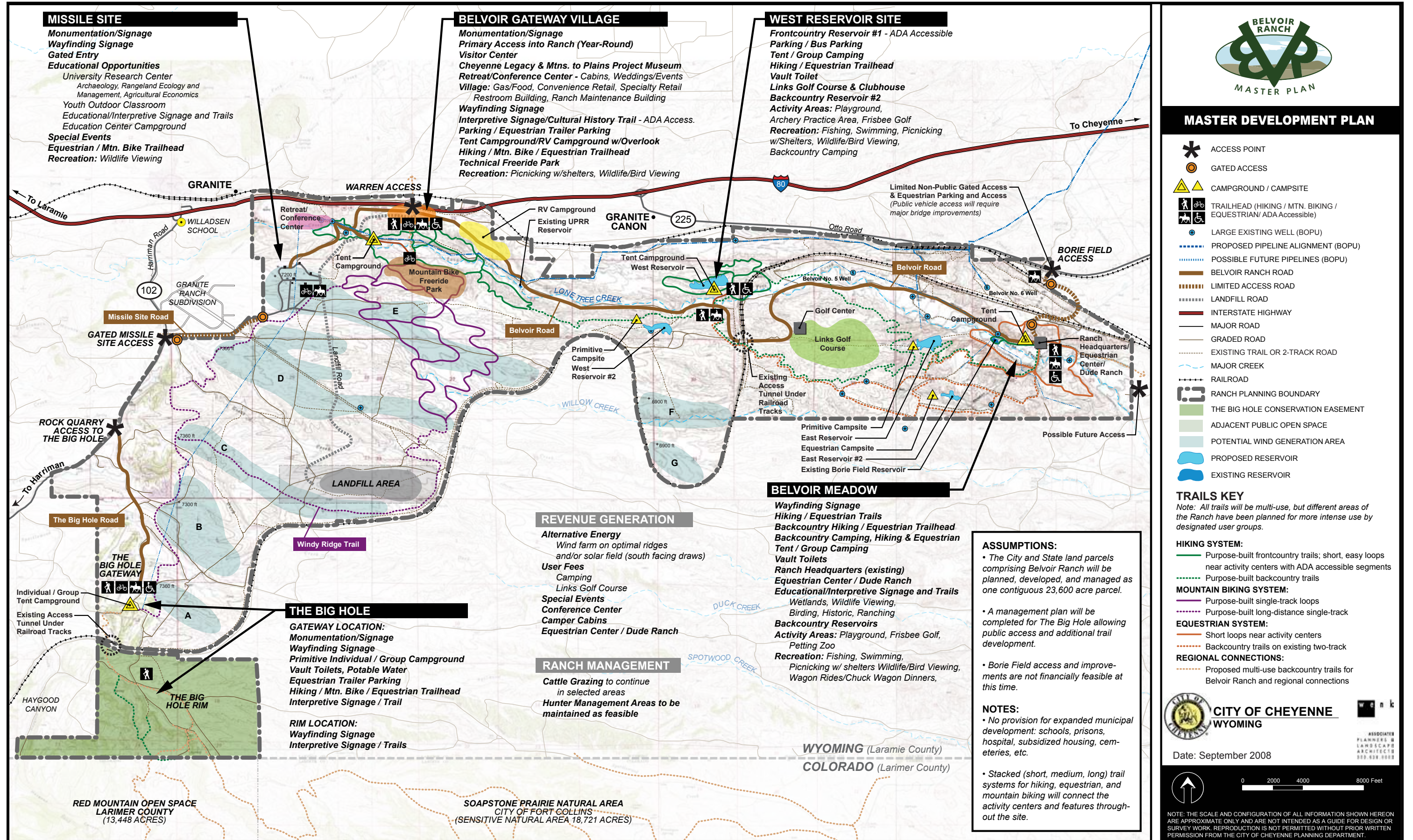




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**INSERT MASTER DEVELOPMENT  
PLAN MAP  
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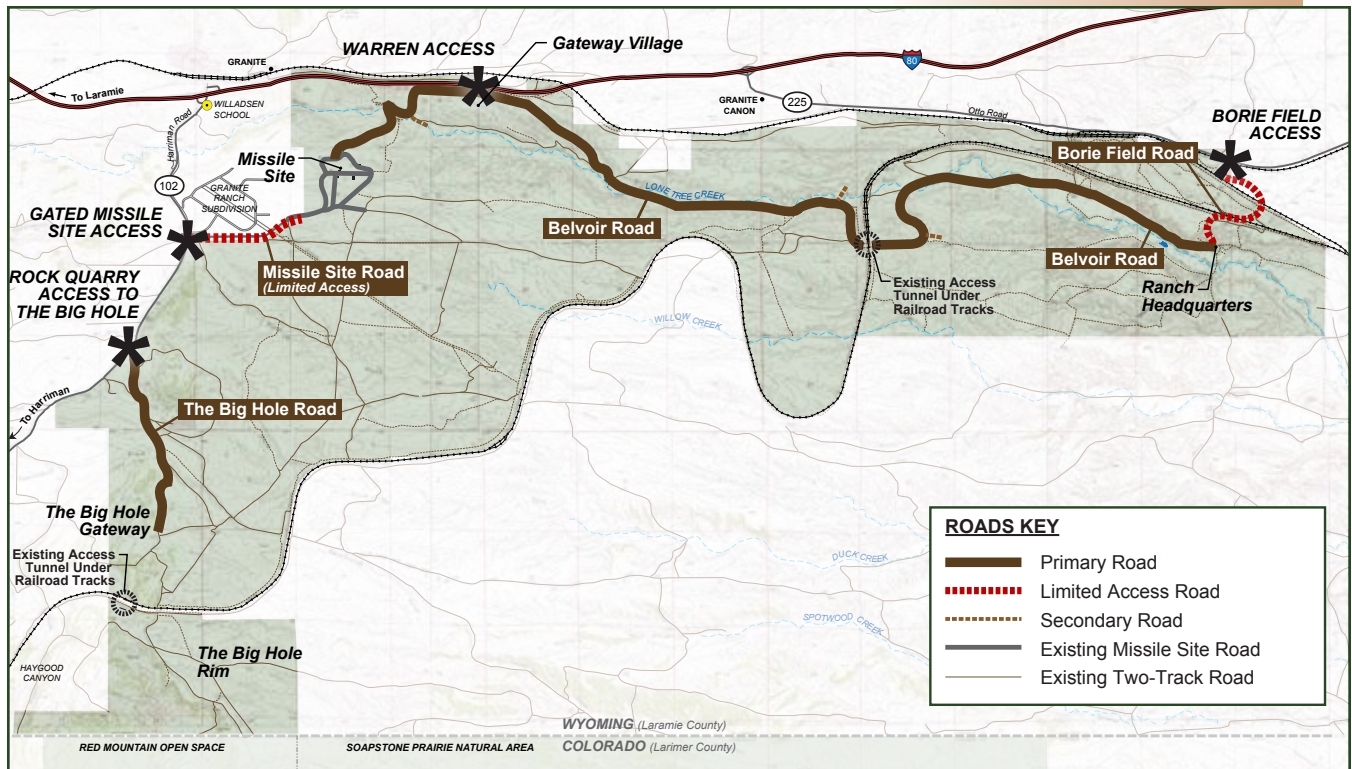






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## RANCH ACCESS AND ROADWAYS



Ranch access and circulation is provided through the following primary roadways:

### *Belvoir Road*

This primary route runs east/west to link the Belvoir Gateway Village with the activity cluster at the Ranch Headquarters. Tentatively named Belvoir Road, this route provides general public access to camping, the reservoirs, links golf course, trailheads, equestrian center and equestrian trails. This main route could also connect with existing ranch roads that would otherwise not be opened for public access, to provide an opportunity for a guided “driving tour.”

### *Limited Access Roads*

Two limited access roads, located off of Harriman Road, are also planned to provide access into the Ranch. A third entrance off Otto Road is desired to provide access to the eastern end of the Ranch.

**Missile Site Road** – The existing paved missile site access road off Harriman Road will be generally

reserved for Ranch/City maintenance and operations needs. The entry will be gated and used as an entrance for public access to special events and educational activities at the Missile Site. This entry will not be available for daily public access.

**The Big Hole Road** – Vehicles will be permitted open access at the Rock Quarry entrance off Harriman Road to reach The Big Hole Gateway and Rim. This road should be gravel to contribute to the rustic experience of visiting The Big Hole. It is assumed that public access across State land (Section #36) will be negotiated to maintain this access for public use.

**Borie Field Road** – The private access at Borie Field will remain operational for Ranch personnel to access the Ranch Headquarters and equestrian center/dude ranch from Otto Road. This entry will not be a public road unless legal access is gained and substantial design improvements are made to three railroad crossings, as discussed later in this section. However, equestrian trail use of the existing route may be allowed.

*Existing two-track road*

### *Secondary Roads*

Secondary roadways will be developed to provide access to key activity areas. These roadways may be paved or unpaved depending on intended types of use, but will likely be gravel due to low anticipated traffic volumes. The intent is that these roadways will terminate at the activity area and will not provide “through routes” to the rest of the Ranch.

### *Two-Track Roads*

Existing “two-track” Ranch roads will remain operational for Ranch and emergency vehicle use only. Selected two-track routes will also be designated for back-country equestrian trail use in addition to infrequent use by Ranch vehicles. No infrastructure improvements are recommended for these routes.

*Grade-separated railroad crossing*

### *Railroad Crossings*

All users of The Belvoir Ranch – public and private, motorized and non-motorized – will be limited to crossing the Union Pacific Railroad line (UPRR) at designated locations. Appropriate gate/fence systems will be required at each legal railroad crossing to provide access to the crossing point while restricting access to the UPRR right-of-way. Existing Ranch roads that route within and immediately parallel to the UPRR right-of-way will not be available for public use.

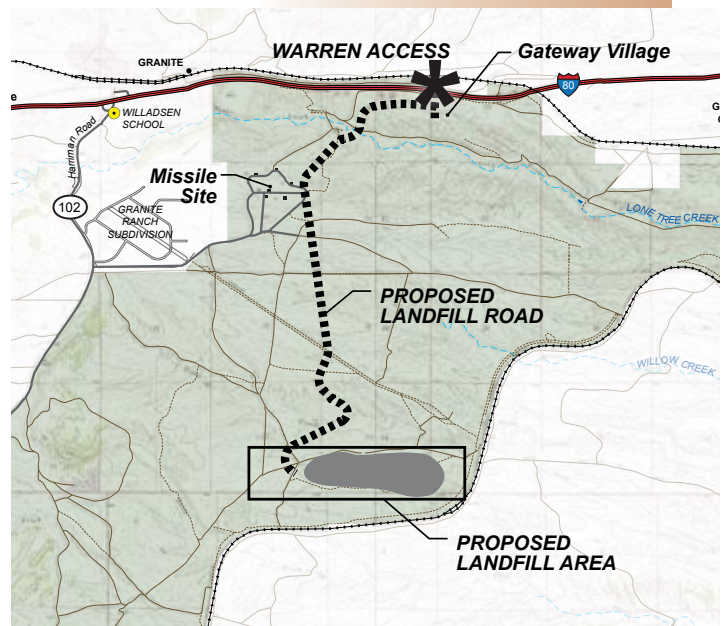
All publicly accessible railroad crossings will be grade-separated. No new at-grade railroad crossings are proposed as part of the land use plan. Existing culverts may need to be retrofitted to better accommodate increased levels of vehicular and/or trail use.



### *The Landfill Road*

If the landfill is developed at the proposed location, trucks plan to use a designated north/south road running five miles from the Warren Exit to the proposed landfill site, along an alignment previously identified. This special purpose roadway will be designed to meet landfill truck needs, and can also be used for ranching and wind farm access. Public use of the road will be prohibited.

Additional fencing will be required along the landfill road for safety reasons. Appropriate berming and landscaping will also be needed to screen the landfill road from view of the Belvoir Gateway Village, proposed recreational facilities such as campgrounds and trails, and interpretive/research activities planned for the missile site.



*Proposed Landfill Road alignment was determined during the public process conducted for landfill feasibility prior to the Belvoir Ranch Master Plan.*

### *Eastern Edge Entrance*

Public vehicular access is desired at Borie Field, due to its proximity to the Meadow Area and Ranch Headquarters. However, the general public cannot be accommodated on the existing private bridge over the Union Pacific Railroad, nor on roads across private properties currently used by Ranch operations. Likewise, public access cannot be accommodated from the Borie access located off Otto Road due to the need to cross multiple railroad tracks at grade.

A future formal eastern entrance to the Ranch is desired. The feasibility of replacing the existing Borie Field overpass or developing a new road heading west from I-25 at a future date should be explored. If determined feasible, a public access road in either location should be developed as a primary road to access the activity cluster in the Meadow Area. This will not significantly alter the overall Belvoir Ranch land use plan, but development of either alternative for primary access will increase the amount of vehicular traffic on site, as the Belvoir Road will provide a connection between two arterial roadways. The required Belvoir Road design standard will therefore likely need to be upgraded with the increase in traffic volumes, and strategies such as traffic calming will need to be considered.

As developments to the east of Belvoir Ranch are reviewed by the City, strong consideration should be given to evaluating connectivity of the properties.



*Borie Fields overpass - requires obtaining public access easements and bridge reconstruction.*



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## RECREATIONAL OPPORTUNITIES

Diverse recreational opportunities are proposed for Belvoir Ranch. The intensity of development and activity types have been specifically structured to be compatible with resource values and conditions in each of the five Development Districts. A multi-use trail system connects the districts so a larger area of the Ranch and beyond can be explored and appreciated based on visitor fitness and desires.

Belvoir Ranch will significantly add to the recreation opportunities in the region. Located six miles from Curt Gowdy State Park and adjacent to Red Mountain Open Space/Soapstone Prairie Natural Area, it has the potential to become a collective draw for destination recreation activities, in particular, mountain biking. With these facilities, the region's mountain biking popularity could eventually become similar to Fruita, Colorado and Moab, Utah.

Recreational activities envisioned on the Ranch include the following:

### *Hiking and Trail Running*

Hikers are anticipated to be one of the main user groups visiting the Ranch. Purpose-built trails will originate in each of the Development Districts, and longer loops will interconnect throughout the Ranch.

Opportunities for interpretive trails focusing on a variety of unique cultural and ecological resources will be provided. Interpretive trails will be ADA accessible.

### *Mountain Biking*

Single-track biking challenges will include areas of rough terrain, cross country epic rides, and technical freeride. The Mountain Bike Freeride Park is expected to be a regional magnet.

### *Horseback Riding*

Based at the equestrian center, (existing Ranch Headquarters) a system of trails is proposed to cross the Ranch, connecting to trailheads in all Development Districts, primitive backcountry campsites, and The Big Hole. Trails will be provided for users of all riding levels.

## **Recreation Activities Envisioned for Belvoir Ranch**

- ✦ *Hiking and Trail Running*
- ✦ *Mountain Biking*
- ✦ *Horseback Riding*
- ✦ *Picnicking*
- ✦ *Camping*
- ✦ *Birding and Wildlife Watching*
- ✦ *Special Facilities*



*Hikers admire the views.*



*Equestrian trails might be organized at the Ranch.*





*The Ranch is well-suited for backcountry camping experiences.*



*Sitings of big game animals, such as the antelope shown above, enhance the visitors' experience on the Ranch.*



*Special facilities proposed on the Ranch include a Visitor Center at the Gateway Village.*

### *Picnicking*

Picnicking facilities will be provided in several locations. Picnic structures for both individual tables and groups will provide shade to improve visitor experience. Picnic areas will also include vault toilets and trash receptacles.

### *Camping*

A recreation vehicle (RV) campground is proposed to be built near the I-80 interchange/Warren Access, providing full-service facilities for Ranch visitors and vacationers traveling through the state.

Tent camping is proposed at two locations – near Lone Tree Creek on the west end of the Ranch and at the proposed West Reservoir site. Campgrounds will be primitive and have group and individual sites, some with ADA accessibility. Fire-rings for open fires will be provided if sites are made fire-safe. Restrooms will also be provided.

The Ranch is well suited for backcountry camping experiences due to its vast size and very minimal human constructs. Backcountry camping is generally limited to Federal lands, and thus Belvoir Ranch offers a unique opportunity to supplement available facilities. Backcountry camping opportunities will include both hiking and equestrian designated-sites.

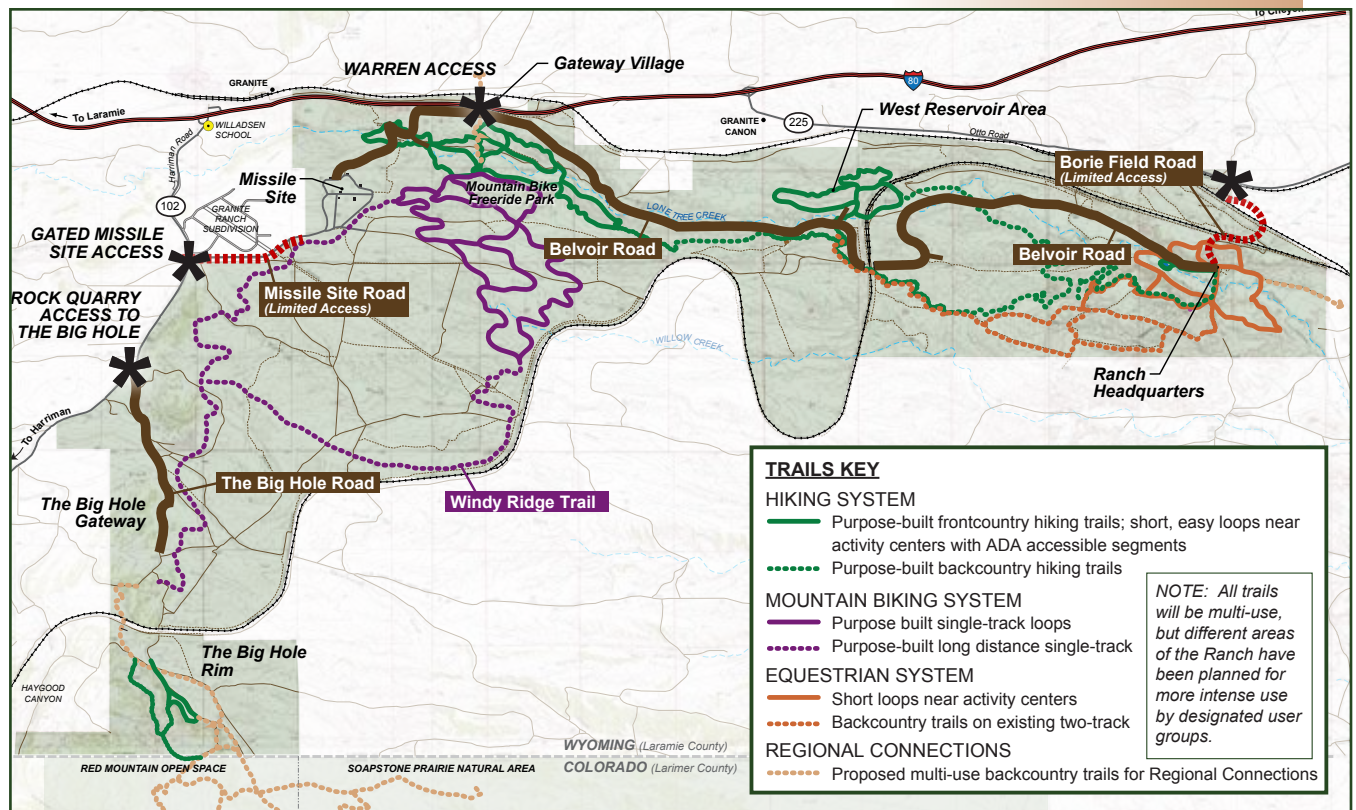
### *Birding and Wildlife Watching*

Birding and wildlife watching will be staple recreation activities on the Ranch. The size of the property, when considered with adjoining open space in Colorado and the diversity of biological communities, provides a high quality birding/wildlife watching visitor experience. A large assortment of wildlife has been documented including antelope, mule deer, porcupine, eagles, falcons, Great-horned and Burrowing Owls, Swift fox, elk, coyotes, bear, mountain lions, and rattlesnakes.

### *Special Facilities*

A links-style golf course is proposed for the West Reservoir Area. A retreat/conference center is proposed for the Gateway Village district. Each facility will be a unique activity for the region and draw visitors from a large area.

## BELVOIR RANCH AND THE BIG HOLE TRAILS



One of the benefits in acquiring Belvoir Ranch is the provision of additional, publicly-accessible open space for Cheyenne residents. Through the Belvoir Ranch Master Plan process, the public has expressed a desire to appreciate the natural beauty and ecosystems of this upland prairie environment on foot, bike and horseback.

Three separate but integrated trail systems are planned to serve hikers, mountain bikers and equestrian user groups at Belvoir Ranch. The trail systems are laid out in a manner that will be compatible with the current working Ranch landscape, and can transition to more active use as selected areas are developed for additional recreation and revenue generation purposes. The map above overlays proposed roads and trails onto the existing pasture system. It is envisioned that trail closures would be necessary when pastures are occupied by cattle, and that pastures would be gated to avoid unauthorized access.

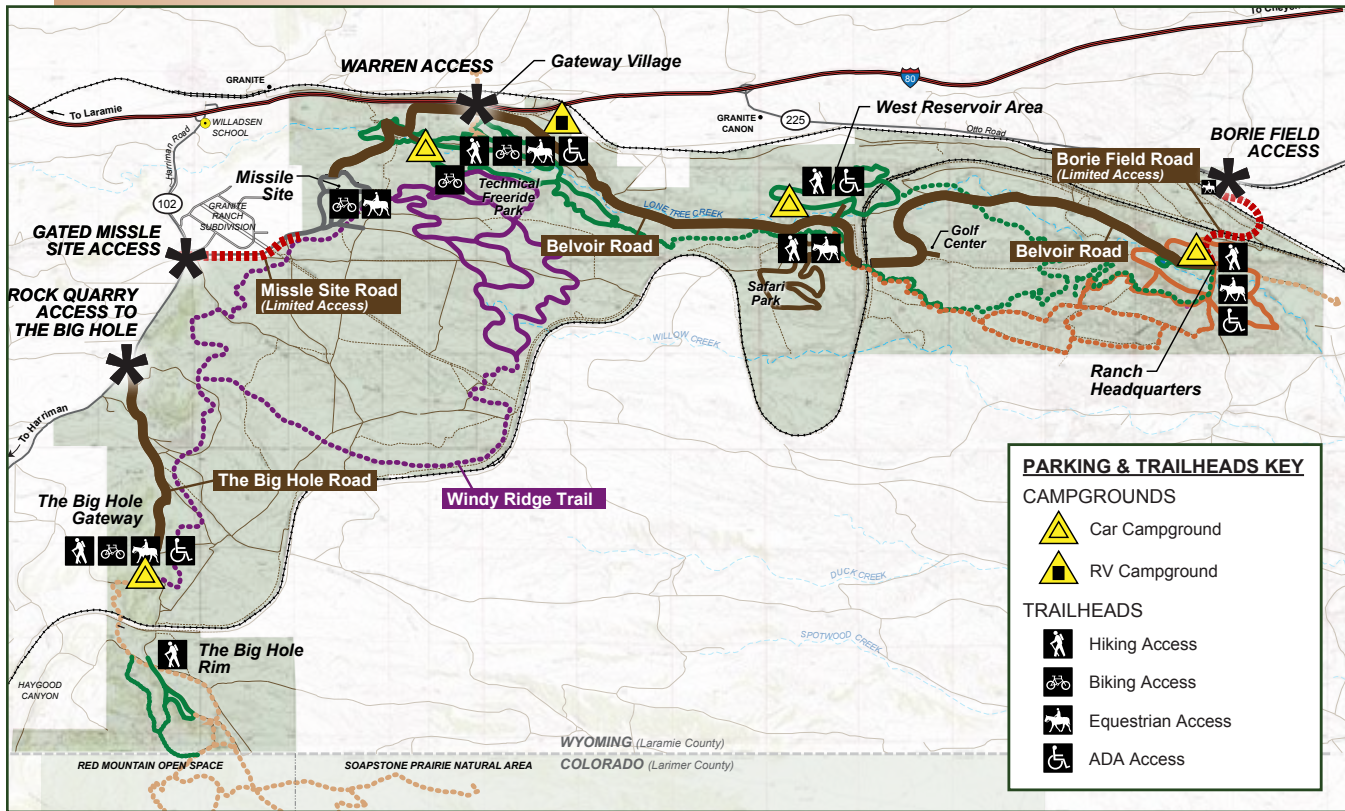
Selected multi-use trails will be allowed on The Big Hole property, but will follow more stringent resource conservation and management principles established for the abutting Colorado properties by The Nature Conservancy, Larimer County Parks and Open Lands, and the City of Fort Collins Natural Areas Program.



Mountain biking trail system at Belvoir Ranch will be developed similar to trails in Curt Gowdy State Park - shown above.  
(photo courtesy of Kevin Rokke)



## PARKING AND TRAILHEADS



*Trailheads shall be signed for appropriate and inappropriate uses.*

Vehicular parking will be provided at numerous areas within each of the five activity areas. Additionally, there will be smaller-scale parking at trailheads for vehicles and at equestrian trails for horse trailers. ADA accessible trails will be served with ADA parking.

Designated parking areas are one element in an overall strategy to managing the carrying capacity, or acceptable levels of human use, on an open space site. On the Belvoir Ranch, limiting parking will be challenging due to the expanse of wide-open prairie where vehicles can informally park along roadways when trailhead parking lots are full. Ongoing management and monitoring of acceptable levels of site use, adequate parking quantities, and parking enforcement policies will be necessary.



## CONSERVATION

### *Natural and Cultural Resources*

Belvoir Ranch is a unique and biologically diverse site with an abundance of wildlife and plant life. The Ranch supports hundreds of species of plants and animals. Birding and watching both large and small mammals, reptiles, and amphibians will be an activity enjoyed by many visitors, though it will be important to ensure that appropriate buffers are maintained between humans and wildlife, and that key migration corridors, and foraging and breeding areas, are protected through seasonal closures or more stringent restrictions where necessary.

A variety of vegetation ecosystems occur on the Ranch: Mixed Grass Prairie, Wyoming Big Sagebrush, Xeric Upland Shrub, Ponderosa Pine, and Riparian Corridor. The Ranch is predominately comprised of the high prairie grassland, a globally rare ecosystem. The 200-acre Riparian Habitat Wildlife Extension Agreement with the U.S. Fish and Wildlife Service will be continued for the study and protection of the Colorado Butterfly Plant (current agreement to expire 2019).

There is evidence that humans have prized the area for over 12,000 years with near continuous habitation. More recent occupants have been Native Americans, homesteaders, ranchers and the Air Force Missile Base. Each has left traces of their activities. The Office of the Wyoming State Archaeologist performed a Class 1 archaeological survey of the Ranch, identifying several cultural sites. As improvements are slated for development, additional, more intensive and detailed cultural and archaeological resource studies will need to be completed to identify resource types and locations, and to develop appropriate strategies for preserving artifacts and avoiding impacts due to human use.



*A ground nest is one of the many unique treasures visitors might find on the Ranch.*



*Ute ladies'-tresses, Colorado butterfly plant, and Preble's meadow jumping mouse are supported by riparian habitats such as found along Lone Tree Creek.*



*Historic homestead remnants include a windrow of willows.*



*Visitors cherish breathtaking views such as the red rock outcrops contrasting with lush mountain mahogany along the West side of the Ranch.*



*Ranching operations on Belvoir Ranch is part of its historical legacy.*

### Open Space

Open space can be valued based on its benefits associated with scenic backdrops and buffers, passive and active recreational resources, and preservation of traditional resource-based land uses such as farming and ranching. These broad benefits can be measured by quality of life indicators, enhanced property values, and the ability to create a sustainable land ethic for Cheyenne's future.

It is estimated that Cheyenne's population will more than double within the 30-year timeframe of the Belvoir Ranch Master Plan. *PlanCheyenne* has identified the need for additional open space as population grows. The significant natural landscape and environmental habitat, coupled with the historic cultural resources found on Belvoir Ranch, will be preserved as open space. Ranching operations that historically utilized the Ranch are a compatible use for open space preservation.

### RANCHING

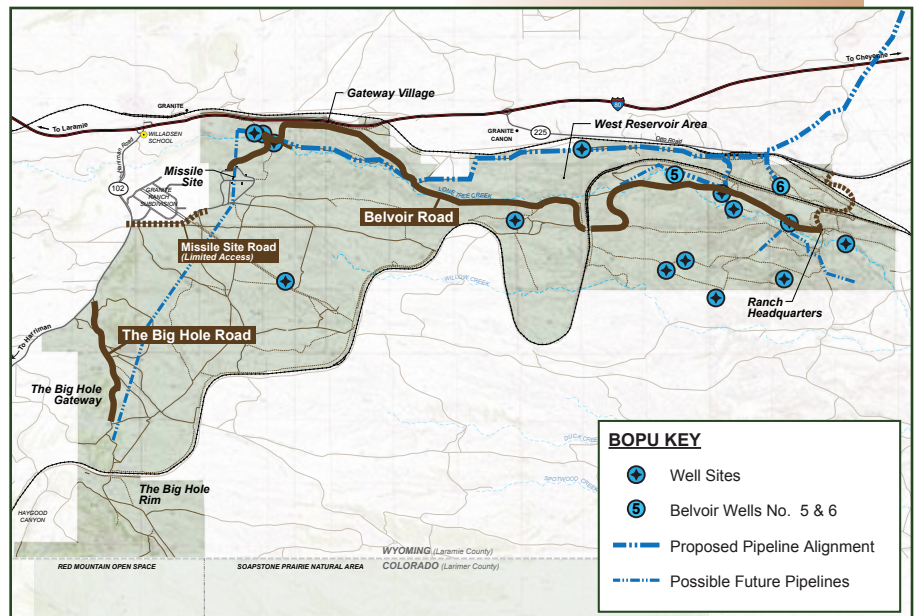
Belvoir Ranch is currently leased for ranching operations and is part of Cheyenne's historical legacy. Ranching is an activity the community would like to maintain as part of the "working landscape" goal for the Ranch. Management of ranching operations will evolve as recreation and economic development plans are implemented. Available financial resources and community priorities will affect what and when specific development occurs and how it affects ranching.

## PUBLIC UTILITIES: WATER RESOURCES AND SOLID WASTE LANDFILL

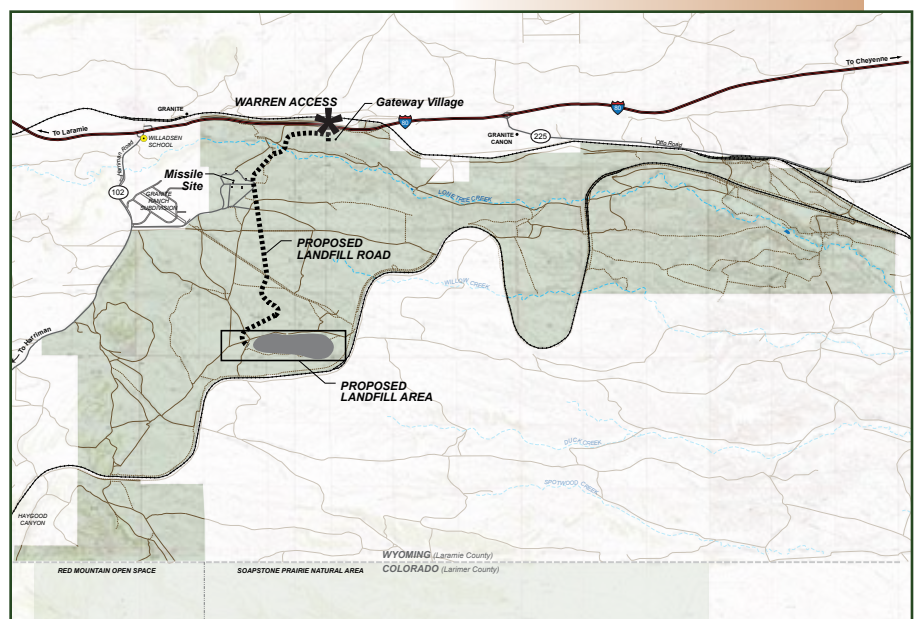
Subsurface water resources will be developed by the Board of Public Utilities (BOPU) for municipal supply. The BOPU has completed preliminary studies identifying potential well sites and interconnecting pipe corridors traversing the northern portion of the Ranch. This plan will be implemented in phases, as City water needs increase.

Cheyenne's Public Works Department also contributed to the purchase of the Ranch. A solid waste landfill site has been identified on the Ranch and may provide municipal solid waste management needs in the future.

A five-mile haul road alignment originating at the Warren exit was identified in the feasibility study. The final location of the haul road will be determined based on development at the Belvoir Ranch Gateway Village and conference center site. The haul road should be located where it has the least environmental impact and visual and noise impact on visitors of the Ranch. If the road is constructed, landscape buffers, such as berms, would be implemented to screen it from view.

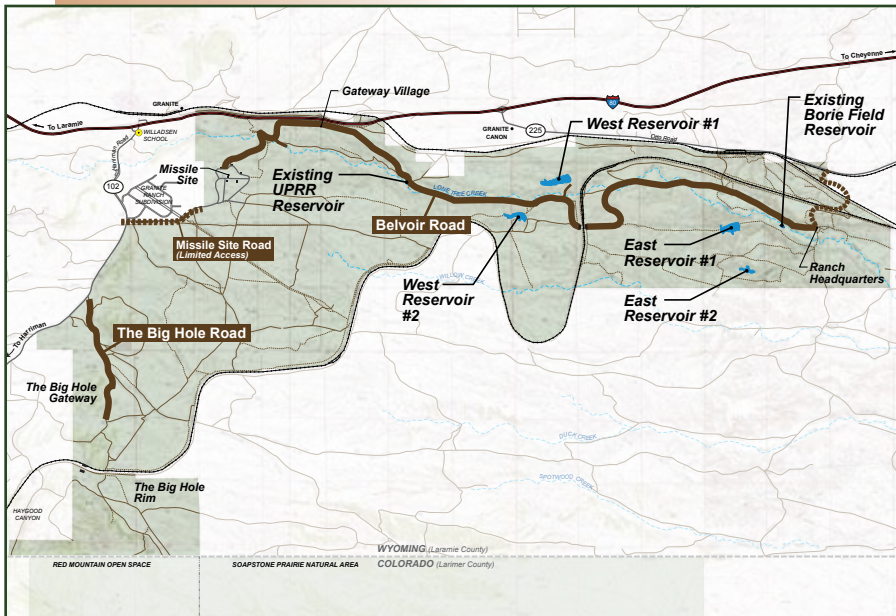


Potential well sites and pipe corridors have been identified by the BOPU for municipal water supply.



Potential landfill site and road have been identified by Cheyenne's Public Works Department.





Four reservoirs have been proposed in the Belvoir Ranch Master Development Plan.

## SURFACE WATER - RESERVOIRS AND LONE TREE CREEK

Recreational use of the subsurface water supply on the Ranch is consistent with the overall water resource management goals established by the Board of Public Utilities. The Master Development Plan identifies areas that are most suitable for surface reservoirs, based on topography and location relative to potential wells and water supply lines. Engineering feasibility studies will need to be performed at each location before further development planning can proceed. The reservoirs may

perform municipal water supply functions such as pre-treatment or storage, and serve as water supply for fire suppression, in addition to recreation.

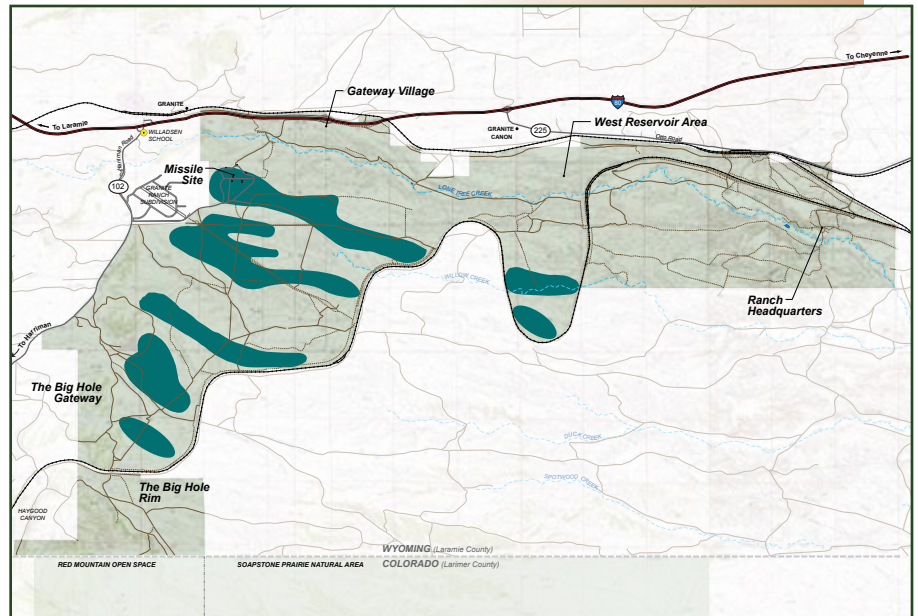
If recreation uses are allowed, the reservoirs could provide scenic, fishing, and swimming opportunities and wildlife habitat. No motorized boating will be allowed on the existing or proposed reservoirs, though non-motorized boats, like canoes, paddle boats, or “belly boats” for fishing, could be permitted.

The plan identifies suitable locations for surface reservoirs, but does not imply that they will be constructed. Additional engineering studies, as well as the level of public support and cost, will need to be undertaken and considered in the decisionmaking process.

Historically, Lone Tree Creek was a perennial trout stream with greenback and cutthroat trout. The stream is now dry most of the year. The notion of reestablishing the Creek for recreational fishing has been proposed. Preliminary study indicates the notion of reestablishing the creek is impractical due to significant lowering of the water table since the historical perennial flow. However, to support that conclusion, a hydrological sustainability and water management study is required.

## WIND ENERGY AND/ OR SOLAR POWER GENERATION

Electricity generation using wind turbines, and/or solar panels, has been proposed as a compatible use and a “green” way to support the City’s energy requirements on the Ranch. The site is classified as an excellent candidate for a wind farm due to the topography and wind quality. Seven ridge areas totaling approximately 3,500 acres have been identified as optimal and are shown on the Plan.



*Seven ridge areas (shown above in blue) have been identified as optimal for wind generation.*

While wind power generation is possible on all seven ridgelines, priority is given to the four northern-most ridgelines, given the ecological, recreational, scenic and cultural resource value of the southern ridgelines and the impacts that could result if wind power was developed there. Additional evaluation of potential resource impacts will be necessary as part of the feasibility assessment.

The limiting factor to development is the lack of transmission lines serving the site, and more detailed engineering feasibility studies will need to be conducted. And while wind turbines are compatible with cattle grazing, the suitable areas are within the existing Hunter Management Area. Because hunting with firearms can pose a security risk for the wind turbines, compatibility of these activities will need to be studied further.

The property also offers opportunities for solar energy “harvesting” on south-facing slopes. Compatibility of this use with grazing and hunting will also need to be evaluated further.

## EDUCATION/INTERPRETIVE OPPORTUNITIES AND SCIENTIFIC RESEARCH

A strong emphasis on education and interpretive opportunities is a key component of the Plan. The wide diversity of cultural historic sites, plant and wildlife ecosystems, combined with interesting terrain/topography, geology, and scenery, provide sources for a variety of themes and topics for educational activities and interpretive walks.



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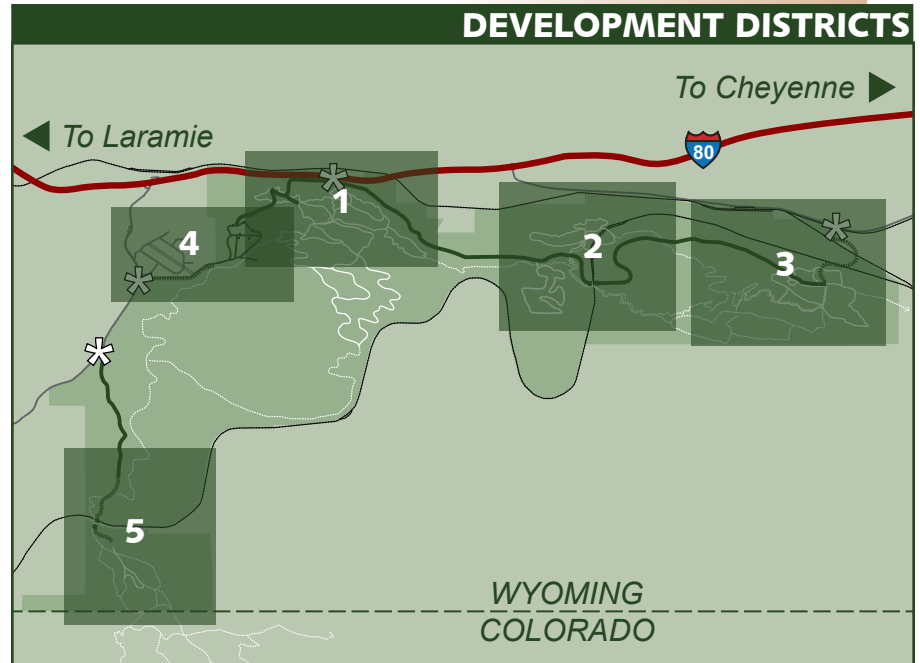
## Section 4: Ranch Development Districts

### OVERVIEW

Five Development Districts, or activity areas, have been defined based on terrain, water features, flora and fauna habitat, ranching activities, existing infrastructure, proximity to highway access and proposed recreation activities. Each District is a destination within the Ranch and will provide facilities that will engage visitors for long periods.

Development in each district will occur over many years and will be reflective of community demand, priorities, and available funds. Development Phasing Plans, presented in the **Build** phase of the Master Plan, will suggest how improvements can be accomplished most cost-effectively to address public priorities.

The following sections describe activities proposed for each District.



*Belvoir Ranch Development Districts include:*

1. *Belvoir Gateway Village*
2. *The West Reservoir Area*
3. *Belvoir Meadows*
4. *The Missile Site*
5. *The Big Hole*



*Facilities located at the 'front door' will reflect the rural character of the Ranch.*

### **Belvoir Gateway Village Activities**

- ✦ Rest stop amenities
- ✦ Recreation vehicle (RV) campground
- ✦ Retreat/conference center
- ✦ Tent campground
- ✦ Mountain bike freeride park
- ✦ Hiking trails
- ✦ Horseback riding
- ✦ Wedding/events area
- ✦ Winter Recreation: sledding, cross-country skiing, snowshoeing

## **1. BELVOIR GATEWAY VILLAGE**

### *The Ranch's Front Door*

Situated at the I-80 Warren Exit, Belvoir Gateway Village is the primary access point into the Ranch. It is the only available access point along the 13-mile northern boundary that has direct access to the Ranch without crossing the Union Pacific Rail Road tracks. It is envisioned as the front door to the Ranch and western gateway to the City of Cheyenne. It will function as a highway rest stop, support visitors to the Ranch and the City of Cheyenne, and serve as a Rural Center supporting outlying rural residents. It will provide parking (including horse trailers), restrooms, fuel, limited convenience/grocery and public services.

Need for a Rural Center was determined and a location identified, nearby at Harriman Road and I-80, in the 2001 Laramie Comprehensive Plan. This site will meet those needs. The primary facilities will be open year-round. During the winter, it will be the access point and trailhead for winter related recreation activities on the Ranch such as sledding, cross-country skiing, snowshoeing, and horseback riding.

### *Parking & Trailheads*

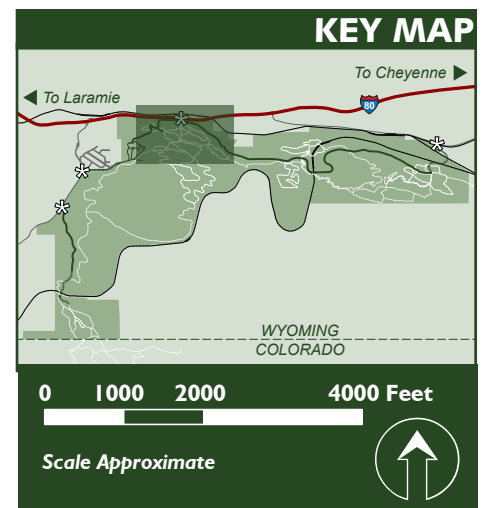
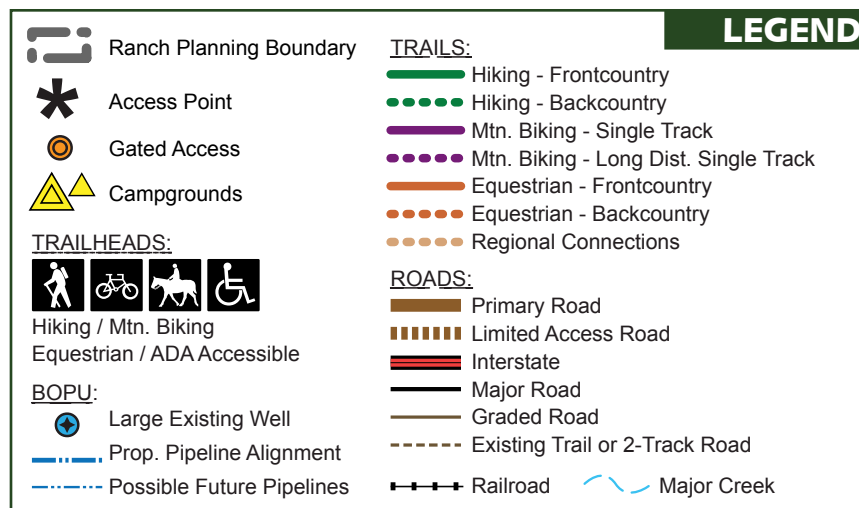
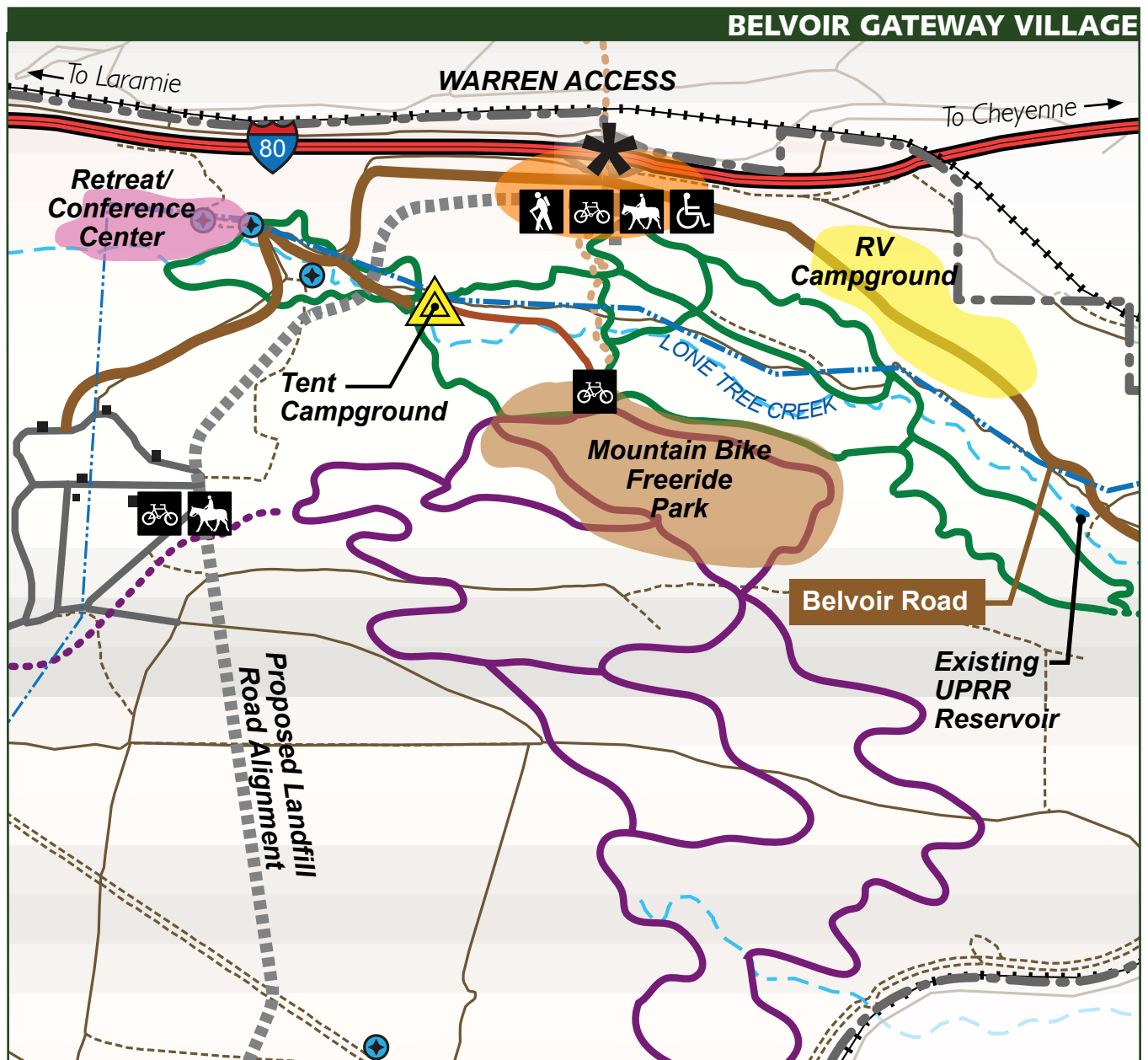
The existing truck parking facility on the north side of I-80 will remain. Truck related services will not be provided at Belvoir Gateway. Vehicle parking will be encouraged at the Village to reduce the amount of traffic on the Ranch. Trailheads to equestrian, mountain biking and hiking trails will be located nearby. There will also be trail access leading directly to the Mountain Bike Freeride Park.

Belvoir Gateway Village parking will be based upon commercial land uses. Trail-user parking will include 30 car spaces and 7 bus/horse trailer spaces.

### *Activities*

Venues and activities proposed for Belvoir Gateway Village will include a recreation vehicle (RV) campground, retreat/conference center, car tent campground, mountain bike freeride park, and wedding/events area.

Located on the upper plateau near the Gateway Village, the RV campground will accommodate 30 vehicles in the first phase (total buildout of 50) with pull through sites. It will provide full services, including water hookups, sanitary dump station, and electricity. It may include Wi-Fi or other support technology. If demand warrants, it will be open year around but not provide full hook-ups in the winter. The facilities will provide ADA accessible toilets, showers, picnic tables with shelters, fire rings and a community Ranch overlook with picnic tables and shelter.





A rustic campground along Lone Tree Creek (Lone Tree Creek Campground) near the conference center will have 15 tent sites with parking. The campground will provide level pads, picnic tables, and vault toilets. Native species of trees will be planted to provide shade and privacy. There will be trailheads for hiking, equestrian, and mountain biking. The mountain biking trail will connect to the Technical Freeride Park. The trailheads will have additional parking for 20 cars, 7 equestrian trailers, and a small corral.

A mountain bike freeride park will be located on the geologic formation cut by the Lone Tree Creek drainage. It will be designed to provide a variety of challenging topography to host a range of biking skill levels. The primary access points will be at a trailhead near Lone Tree Creek Campground and at the Belvoir Gateway Village.

### *The Built Environment*

Visitors will be welcomed to the Gateway Village with a monumental and memorable landmark sign. The entrance will incorporate hard and soft landscaping that supports the theme and character established in the Village. Wayfinding signage will guide visitors throughout the Village and direct them to facilities on the Ranch. Being the “front door” to both the Ranch and the City, the entrance and Village will be designed to shape positive impressions of the community.

Multiple small buildings will establish a “village” character that allows flexibility for growth of additional facilities as activity level on the Ranch grows. Specialty shops, open seasonally, could cater to specific recreation activities such as camping or mountain biking. A Cheyenne Visitor’s Center will be a significant component. It will serve to welcome visitors to both the Ranch and the City and provide an Interpretive Center. A City Parks and Recreation maintenance building serving the western portion of the Ranch could be part of the complex.

Placemaking for the Ranch and City gateway will be dependent on the architectural expression and formalistically could be in either historic vernacular or contemporary. Architectural style should reflect the established spirit and context of the locale and the wind-swept semi-arid landscape. Architectural features that could be incorporated include: false-front parapet wall, local red brick, roof pitches that easily shed snow, minimum decorative ornamentation, and standing seam metal roofs.

An Interpretive Center planned for the site will celebrate the history of the Ranch and the City of Cheyenne, and will include a range of educational/interpretive exhibits and displays. The proposed Center could include the Cheyenne Legacy Museum including the Mountains to Plains Project. It could also house archaeological artifacts collected on the Ranch that need preservation and protection.

A proposed Retreat/Conference Center could be nestled in the Lone Tree Creek draw near the historic William Williams Homestead site. It will be in the picturesque and quiet noise shadow of I-80, and is envisioned to have a fully equipped central lodge and associated camper cabins, which could be rented independent of events at the lodge. Separate lodging allows flexible expansion of facilities based on demand. The lodge will be designed for winter use for year around programming. Weddings and other special events could be staged at the facility.

### *Trails*

A system of loop trails will provide for easy, short-distance hiking and biking that connects the proposed retreat/conference center, car campground, mountain bike Technical Freeride Park, RV campground, and the Belvoir Gateway Village.

Trail user support facilities, supplying maps and provisions, will be provided at the Belvoir Gateway Village entrance since it will be the primary access point for the majority of trail users. Bicycle rentals and repair services as well as additional Village amenities are planned.

Belvoir Ranch will be closed to vehicular access from November to April. However, walk-in access will be permitted at Belvoir Gateway Village for cross-country skiing, snowshoeing, and other winter trail activities.

Trails will avoid routing within ¼ mile of the known Golden Eagle's Nest and/or will implement seasonal closures during nesting, between February 1 and August 31.

### *Education and Interpretive Opportunities*

Site amenities associated with the Retreat/Conference Center will include information/interpretive kiosks and signage, ADA accessible interpretive trails, picnic tables and shelters, wildlife viewing area with spotting scopes, and trailheads to other areas of the Ranch.



*Family-oriented water-related activities are envisioned in the West Reservoir Area.*

## West Reservoir Area Activities

- ✦ Fishing
- ✦ Swimming
- ✦ Picnicking
- ✦ Tent camping/group camping
- ✦ Hiking trailhead with stacked loops for a range of abilities and ADA accessibility
- ✦ Equestrian trailhead
- ✦ Frisbee golf
- ✦ Playground
- ✦ Archery practice area
- ✦ Wildlife viewing/Birding
- ✦ Links golf course

## 2. THE WEST RESERVOIR AREA

### *Water Fun*

Areas that are best suited for surface reservoirs that could provide for water supply and recreational needs have been identified based on topography and location relative to potential wells and water supply lines. Of numerous locations on the Belvoir Ranch site, the areas shown on the map have been deemed most favorable, based on the factors noted above and proximity to other centers of activity.

If recreational uses are allowed, West Reservoir #1 is envisioned as the primary family-oriented water-related District on the Ranch. The reservoir will not only provide scenic and recreation opportunities but also allow for the creation of wetland and riparian wildlife habitat at the water's edge. The focus is on creating family-friendly environments with a variety of uses. Other potential recreational activities could include a frisbee golf course, playground, and archery practice area.

West Reservoir #2, a second reservoir south of Belvoir Road, will be trail accessible only. It is planned to provide backcountry camping and picnicking experiences for hikers. No structured development will be provided.

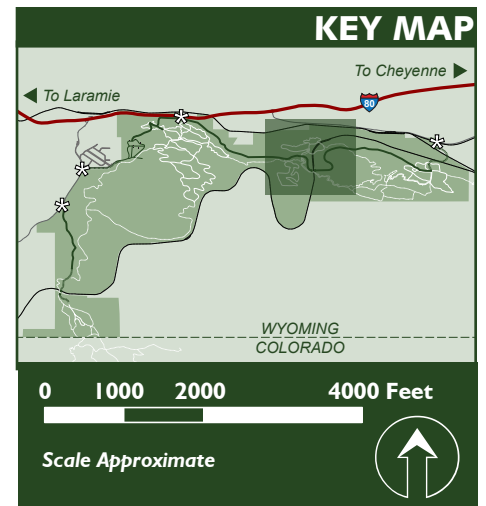
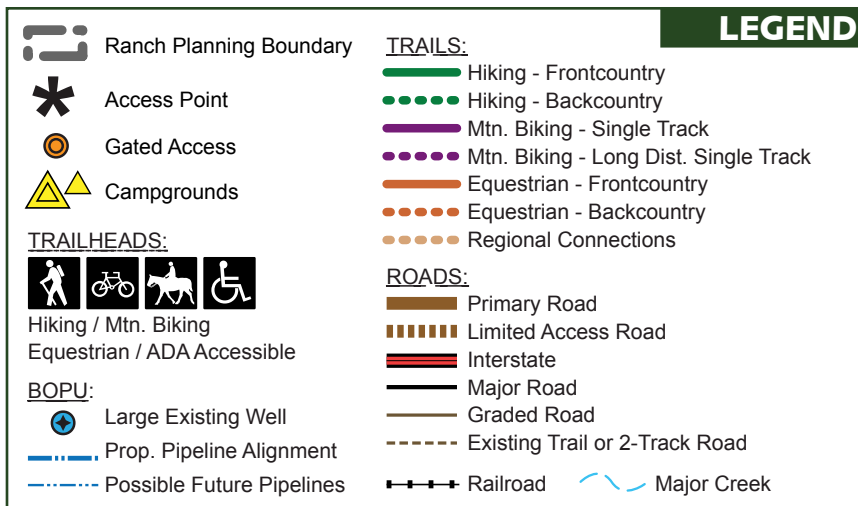
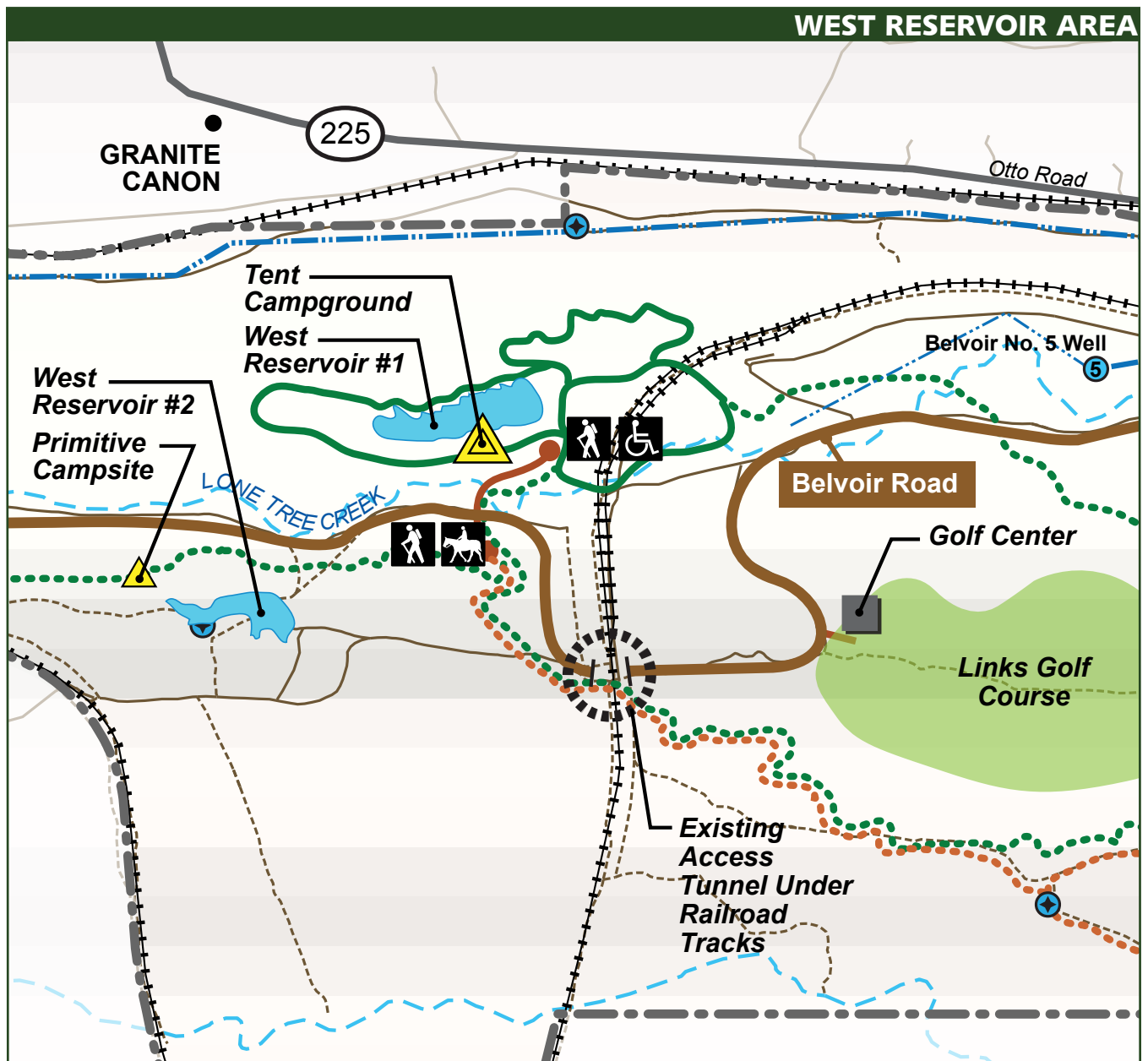
While suitable locations have been identified, this does not imply that any or all of these reservoirs will be constructed; rather, the plan identifies suitable locations for these activities, should they be deemed desirable based on level of public interest, engineering feasibility, cost, and support from the Board of Public Utilities. If the reservoirs are not constructed, this area could still provide low-impact recreational opportunities such as hiking and camping.

Dark sky is one of the quality characteristics of the vast high prairie of Belvoir Ranch. To preserve that quality, no electricity will be provided to the West Reservoir District with the exception of the golf course clubhouse area.

### *Access and Parking*

Direct access from Belvoir Gateway Village to this area without having to pass through a culvert under the railroad allows for easy accessibility for private vehicles and horse trailers. Belvoir Road, a one-lane road under the railroad track, will connect to the golf course site and continue on to The Meadows area. Parking will be provided at the swimming beach (20 car, 3 handicap, 2 school bus), picnic areas (27 car, 4 handicap), campground (20 cars) and trailheads (20 car, 5 horse trailer).





### *Activities*

If recreation uses are allowed, the reservoirs could provide fishing and swimming opportunities. Fishing structures and wildlife/birding observation blinds will help reduce impacts to natural areas. No motorized boating will be allowed on any of the existing or proposed reservoirs, though canoes, paddle boats, and “belly boats” for fishing could be allowed.

Covered picnic shelters for both individual tables and groups will be constructed and will also incorporate supporting parking areas and restrooms. Consideration must be given to the placement of the picnic structures, restrooms, kiosks, and parking areas, so that they do not adversely impact scenic views. Wildlife-safe trash receptacles should be used.

Considerable public interest has been expressed in a links-style golf course and clubhouse. Links-style golf is by nature minimalistic. The course design embraces the native, existing, treeless terrain; requires minimal irrigation; and blends into the surrounding viewshed. The existing xeric grassland co-mingles with the xeric grasses of the links design. Preliminary investigation has been completed and a suitable site for an 18-hole course, has been identified and shown on the plan.

### *Trails*

A stacked-loop hiking trail system will be developed extending out from West Reservoir #1. Three loop trails will provide easy front-country hiking in a variety of terrain including along the water's edge, elevated above the riparian corridor, and utilizing two existing culvert crossings under the Union Pacific Railroad to route through the Star Mill Pasture. Additional hiking routes will increase in difficulty and length as users move further out from the trailhead onto backcountry hiking trails that lead to the equestrian center to the east and campgrounds to the west.

### *ADA-Accessible Trails*

The loop around West Reservoir #1 will be developed as an Americans with Disabilities Act compliant facility. A flat, well-groomed crusher-fines trail will also be well suited for use by strollers, young children, and inexperienced bicyclists.

### *Education and Interpretive Opportunities*

An interpretive trail with signage is planned to surround West Reservoir #1 and will focus on the littoral and riparian ecosystem and geology unique to this part of the Ranch.





### **The Meadows Activities**

- ✦ *Equestrian Center and horse boarding facility*
- ✦ *Picnic shelters for families and groups*
- ✦ *Tent camping – rustic with covered picnic tables*
- ✦ *Wagon rides/chuck wagon dinners*
- ✦ *Hiking trailhead with stacked loops and backcountry trails*
- ✦ *Equestrian trailheads with stacked loops and backcountry trails*
- ✦ *Backcountry campsites – hiking & camping with your horse*
- ✦ *Swimming*
- ✦ *Fishing*
- ✦ *Playground*
- ✦ *Frisbee golf*

## **3. BELVOIR MEADOWS**

### *The Ranch Animal Experience*

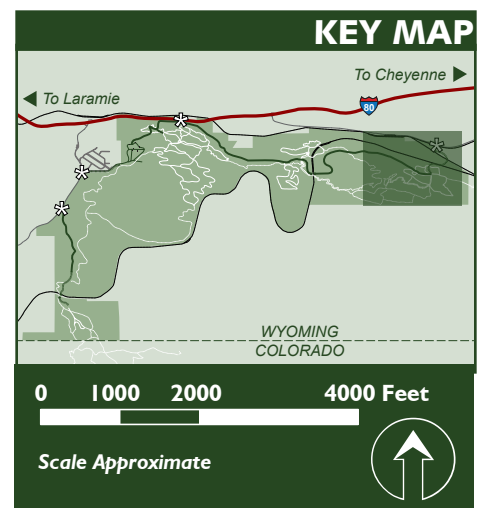
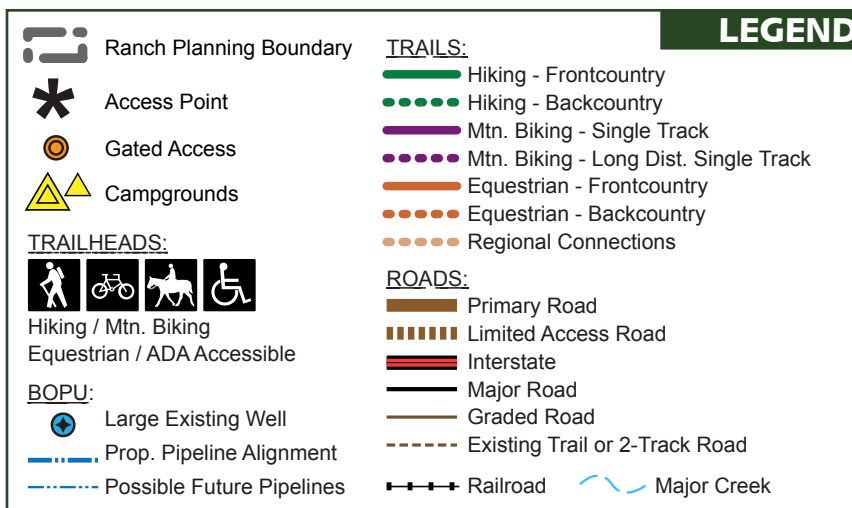
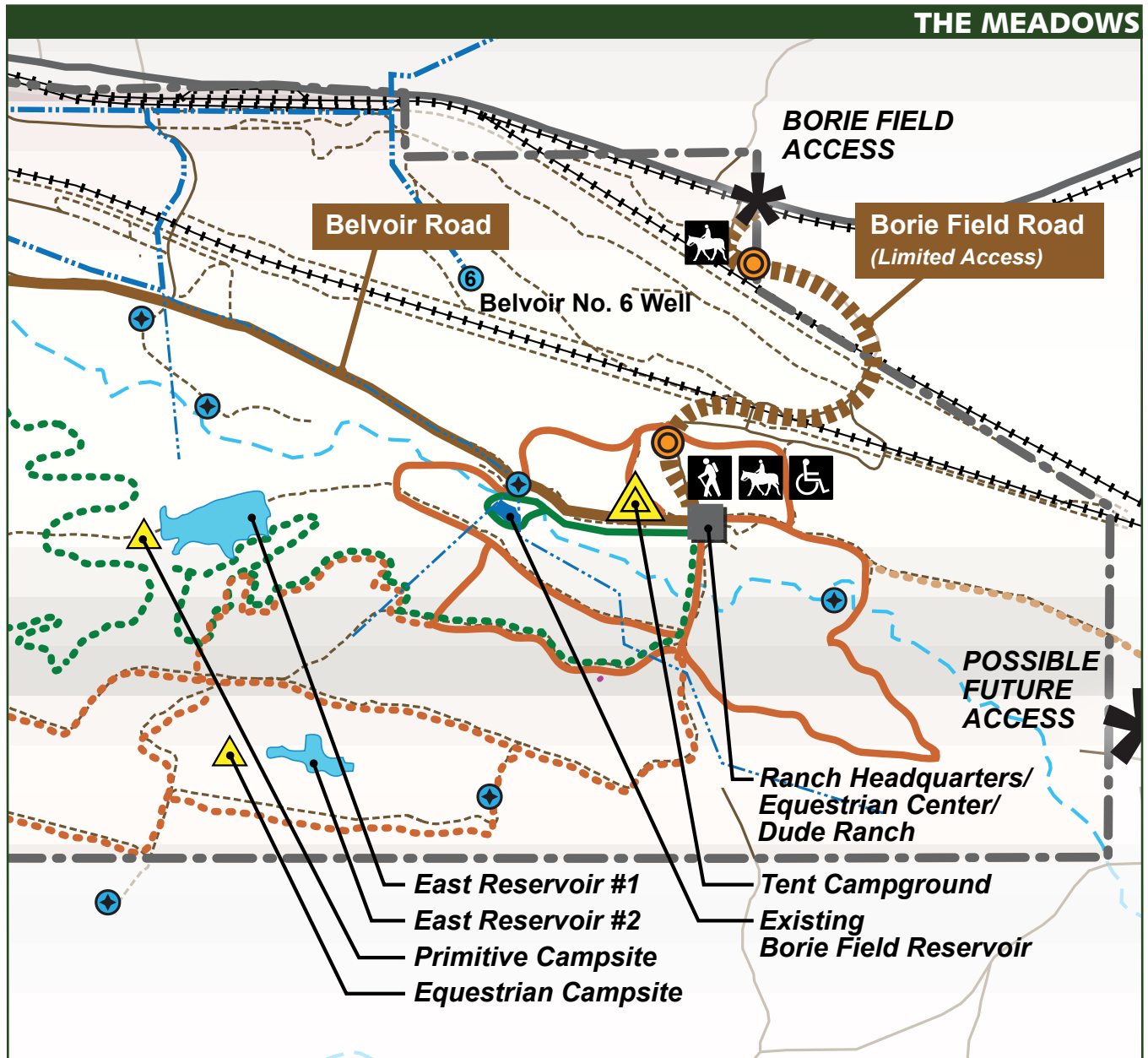
Belvoir Meadows is an area on the eastern end of the Ranch centered on the existing Ranch Headquarters complex. Its primary natural feature is a broad riparian habitat and sub-irrigated alluvium created by a free-flowing well into existing reservoir and Lone Tree Creek basin. The Ranch Headquarters, including corrals, barns, housing, water facilities, and pastures, will be preserved and utilized for an equestrian center and other animal-based recreation activities.

The Ranch Headquarters is also a vital component of the ranching operations. Incoming cattle are delivered to the Ranch at this location in the spring. Haying in the meadow pastures is the best on the Ranch.

Subject to the same caveats for the West Reservoir area, two constructed reservoirs have been proposed in The Meadows area (Meadows Reservoir #1 and #2), one frontcountry with structured recreation facilities and the other backcountry for primitive camping/picnicking. If recreation uses are allowed, the frontcountry reservoir, Reservoir #1, will host a variety of family-friendly recreation activities, including a possible playground and frisbee golf course.

### *Access and Parking*

Public vehicle access to this District will be from the west via the improved Belvoir Road. The existing Borie and Borie Field entrances will remain limited to Ranch, City, railroad and utility vehicles only. Ideally, the City will eventually be able to establish access to The Meadows from Otto Road and build the required viaduct infrastructure to cross the multiple railroad tracks. Access into the Ranch from the east is also very desirable, as it will solve multiple internal vehicular circulation challenges, safety issues and greatly improve accessibility. As development proposals are brought forward for City review, opportunities for access and connectivity from the east side should be explored.



### *Activities*

The reservoirs planned for the District will provide scenic and recreation opportunities and enhanced riparian and wetland wildlife habitat at the water's edge. Location of both reservoirs is based on topography conducive for dammed reservoir construction, and being out of the Lone Tree Creek flood plain and flowline.

Meadows Reservoir #1 is envisioned for frontcountry water-related recreation activities appealing to a wide range of visitors. Reservoir #2 is planned to provide backcountry camping and picnicking for trail users. No structured development will be provided at Meadows Reservoir #2.

Birding and wildlife viewing is excellent in the Meadow reservoir environment and viewing blinds and interpretive displays will be constructed in strategic locations. There are a large number of songbirds, waterfowl, pelicans, cormorant, and Great Blue Heron. It is also a good area to observe Mule deer fawning.

### *The Built Environment*

Existing Ranch Headquarters infrastructure will be the core of recreation opportunities in this district. An equestrian center and animal related activities, and a possible horse boarding facility, are proposed to be developed around the core. The existing facilities will continue to be utilized by ranching operations.

### *Trails*

***Equestrian Trails*** - An equestrian center will be developed at the current Ranch Headquarters. From this activity base, a stacked-loop trail system will accommodate equestrian trail users of varying skill and experience levels.

An interim equestrian-only trail shall be developed from a trailhead located on the northern edge of the Ranch at the Borie Field entrance. This trail will need to use the existing viaduct over the UPRR Main Line tracks, an existing at-grade internal roadway crossing, and an existing culvert under the UPRR 3rd Track. Access easements across private property will also need to be negotiated as the existing ranch access road, and at-grade railroad crossing in Section #24 are located off Belvoir Ranch property.

Interim use of the backcountry hiking trails and/or the future roadway alignment will provide long-distance trail opportunities to reach the Ranch Headquarters until a formal entrance is provided on the eastern edge of the ranch.



Trails will be routed to minimize disturbances to the Lone Tree Creek riparian corridor, and will be located in upland terrain to protect wetlands/sensitive environments.

Trails will also be routed to minimize disturbances to the existing hay meadow, a revenue-generating agricultural use. Proposed equestrian trails are intended to follow existing roads across the riparian corridor from the Ranch Headquarters in route to higher ground. No new equestrian trails are proposed within the meadow fields.

### *Existing Conservation Area*

Within The Meadows is a 200-acre conservation area for the study and protection of the Colorado Butterfly Plant. The Riparian Habitat Wildlife Extension Agreement with the U.S. Fish and Wildlife Service expires in 2019. Habitat protection is a requirement; development will be outside of conservation area or minimally impact it for interpretive trails or trail crossings.

### *Education and Interpretive Opportunities*

Wetland and riparian lowland ecosystems will be the focus of interpretive and educational opportunities in this district. Other interpretive topics might include ranching and cultural history. An educational classroom could be offered for schoolchildren supported by a variety of interpretive displays, signage, kiosks, brochures, and audio tours.



### Missile Site Activities

- ✦ Archery Range / Events
- ✦ Athletic biking and/or running races, multi-sport “epic” event races
- ✦ Firearm Events
- ✦ “Roundup Days”
- ✦ Mountain biking and mountain bike freeride park events
- ✦ Horseback riding
- ✦ Youth group
- ✦ Music
- ✦ Cultural events
- ✦ Outdoor Classrooms
- ✦ Seasonal wildlife viewing and birding activities
- ✦ Temporary RV and tent camping for special events and ongoing education projects.

## 4. THE MISSILE SITE

### *A Special Activity Area*

Located on the west end of the Ranch near Harriman Road is the former Atlas Missile site. With suitable improvements, structural stabilization of the former silos, and perhaps adaptive reuse of the structures, this area could serve as a venue for an education center, special events area, and historical/cultural landscape interpretation.

### *Access and Parking*

Vehicle access off Harriman Road, via an existing paved road, will be gated to provide a mechanism for fee collection for special events and to control unauthorized entry onto the Ranch. Monumentation and signage at the gateway will celebrate the unique identity of the Ranch. Flexible auto parking will be provided in fields, based on size of special events, with space for bus/trailer parking to accommodate school groups and tours.

### *The Built Environment*

The Atlas Missile silos have been decommissioned and stripped of salvageable materials. The structures themselves remain recognizable. There may be potential for adaptive reuse of some of the buildings to house educational or interpretive facilities, or perhaps an Air Force Museum, with appropriate modifications to address public safety and health considerations.

The silos, which feature deep pits and other hazards, should be fenced to maintain public safety while a comprehensive environmental and structural evaluation is completed, and costs of cleaning up contaminants and rehabilitating the structures, are estimated. These additional studies will provide the necessary information to evaluate whether the structures can be salvaged and rehabilitated, or whether cost and feasibility considerations will preclude further public access unless they are demolished.

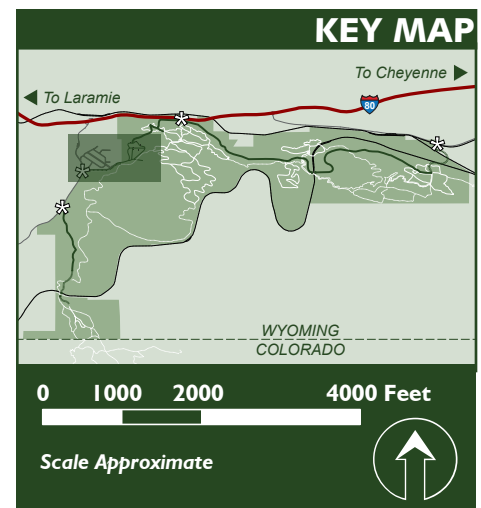
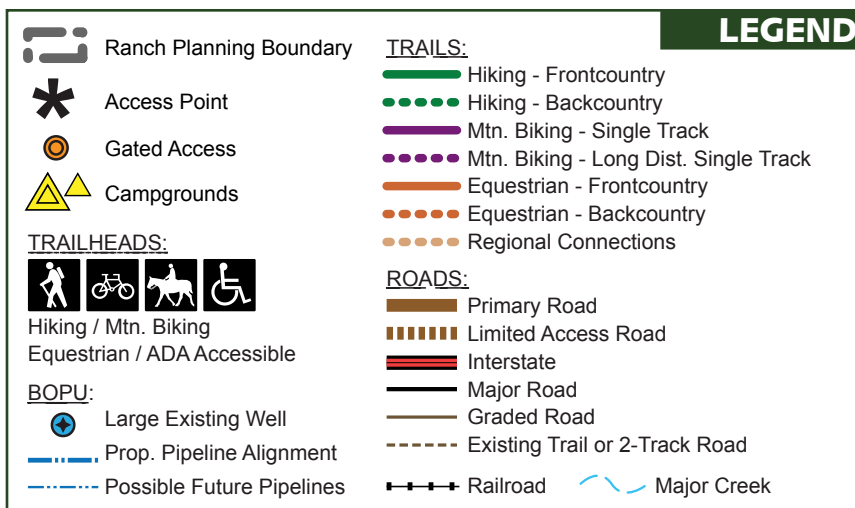
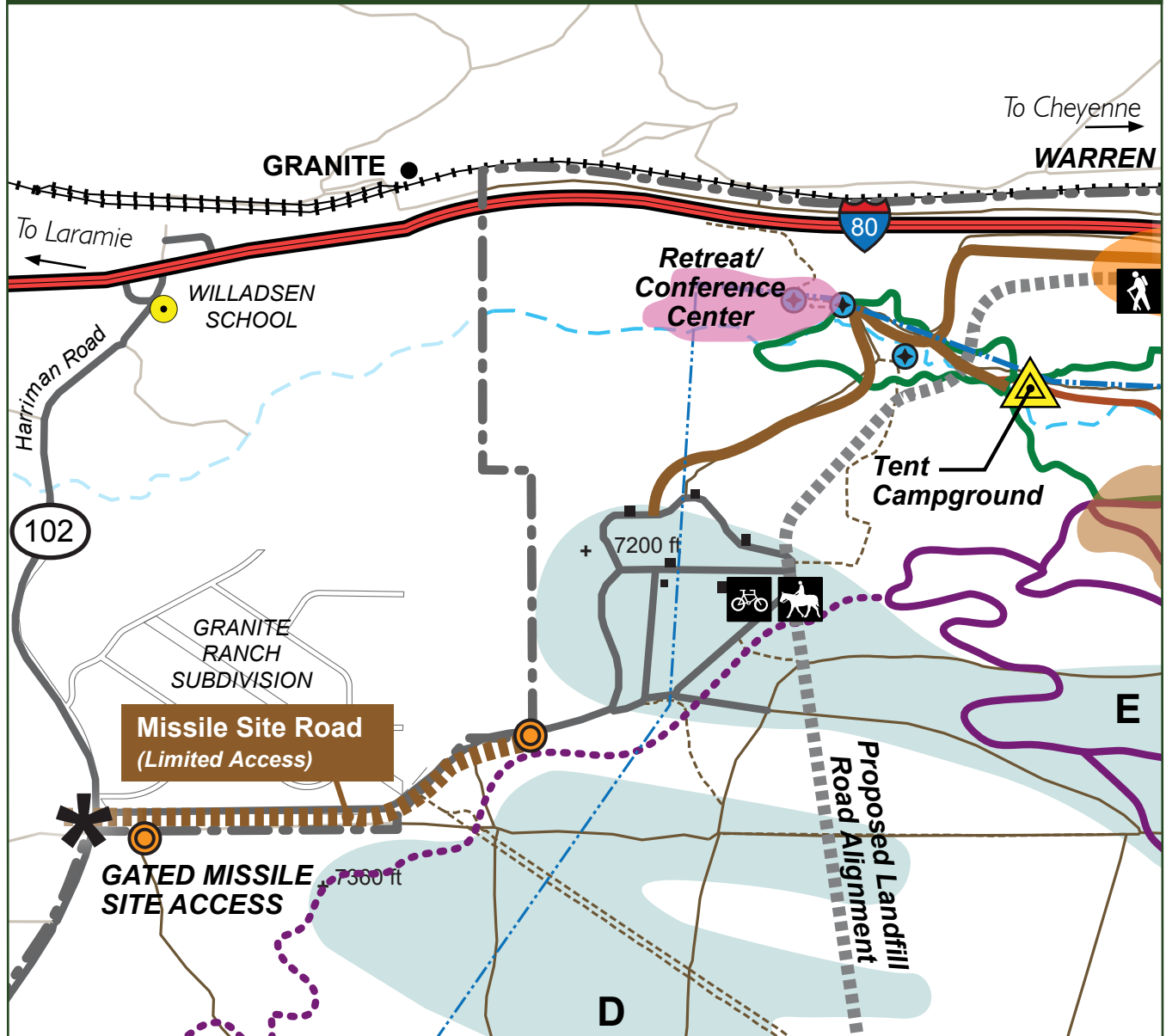
### *Trails*

Trailheads for biking and equestrian use are intended to connect to the mountain bike freeride park and the Ranch wide trail systems. One multi-use trail is proposed to skirt the eastern edge of the Missile Site along the Windmill and Lone Tank pasture fence lines. Daily trail access to restroom facilities provided at this site may be permitted, but such access shall be capable of being closed off during special events.

### *Education and Interpretive Opportunities*

Numerous educational opportunities for university research include archaeology, rangeland ecology and management, environmental studies and agricultural economics. Educational and interpretive opportunities for outdoor classrooms for school groups and the general public could be developed.

## MISSILE SITE







### **The Big Hole Gateway Activities**

- ✦ Scenic Viewing / Overlook
- ✦ Hiking
- ✦ Mountain Biking
- ✦ Horseback Riding
- ✦ Primitive Camping
- ✦ Parking and Trailheads
- ✦ Picnicking
- ✦ Outdoor Classroom
- ✦ Interpretive Cultural Trails

## **5. THE BIG HOLE**

### *Geologic Grandeur*

The Big Hole is a significant geological feature with regional significance. The larger portion of The Big Hole, which is south of the state line, is shared with Red Mountain Open Space managed by Larimer County, Colorado. Belvoir Ranch is the northern terminus of an extensive interstate trail system that originates in Colorado. Management of visitors and the open space will involve a collective effort between Larimer County and the City of Cheyenne.

Supporting facilities for visitors will be developed just north of the tracks in the Big Hole Gateway, which is an area of less sensitive environmental, visual and cultural resource impact. Access to and development within The Big Hole Gateway district will include modest user services, including a primitive campground, parking, and trailheads.

### *Access*

Four miles of natural surface entry road will be constructed, leading to the Big Hole Gateway. Agreements with Union Pacific will be required to develop trail access through the culvert, connecting to the Big Hole Rim.

### *Activities and the Built Environment*

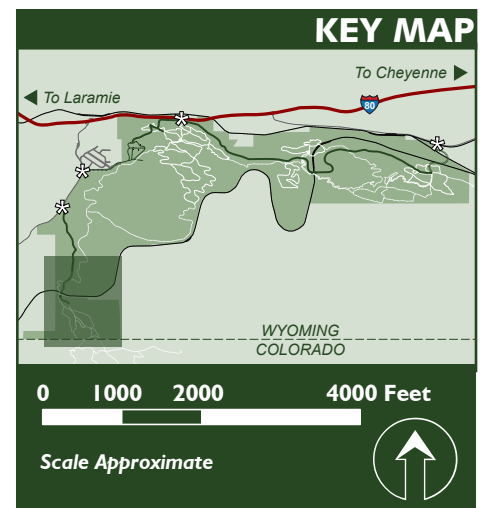
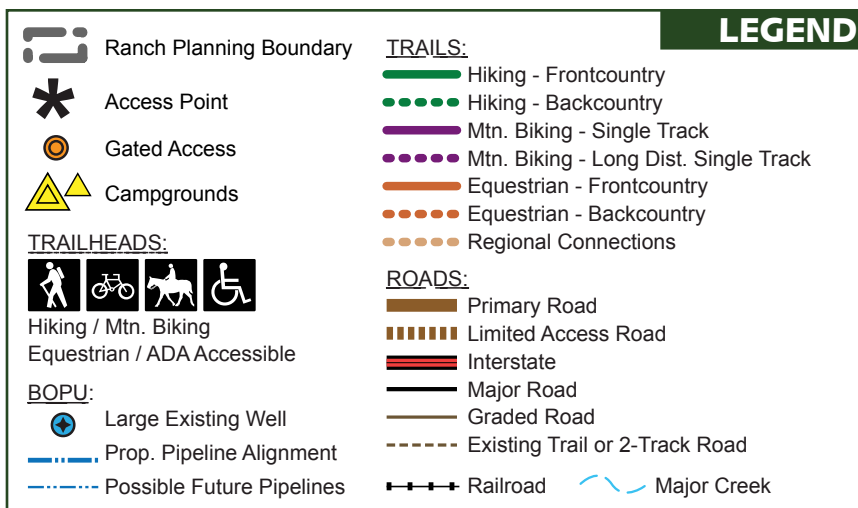
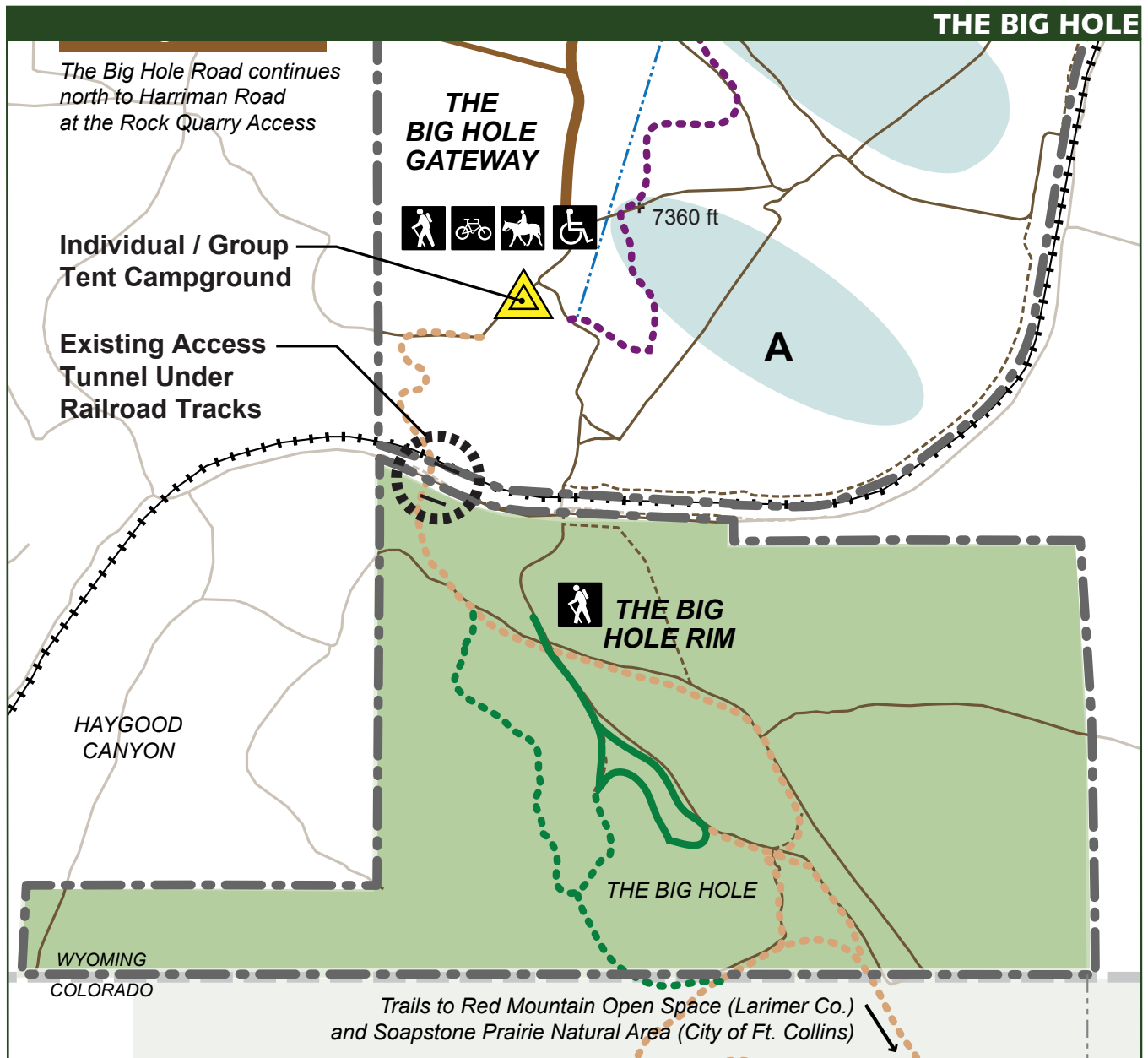
#### **The Big Hole Gateway Development**

The gateway, two and a half miles from Harriman Road, will serve backcountry access. Campsites shall consist of a parking area, level area for tent camping and picnic table. A hand operated (windmill, solar or combination) pump will provide basic needs for visitors and their livestock. No open fires will be allowed.

Camping activities will continue to be evaluated on a periodic basis following implementation, to ensure compatibility with management and patrolling policies applicable to the Soapstone Ranch and Red Mountain Open Space properties in Larimer County.

The gateway is within an identified cultural resource area. Interpretive signage should be provided that describes the significance of the area, as well as penalties for removal or damage of artifacts. before any gateway improvements are constructed, a more detailed cultural resource inventory would need to be completed to identify the extents and types of artifacts and strategies for preserving them as well as preventing degradation from public use.

Originating at the gateway will be equestrian, hiking, and mountain biking trailheads that connect to The Big Hole overlook and other areas of the Ranch.



## **The Big Hole Gateway Campground Amenities**

- ✦ *Fifteen primitive tent sites with parking*
- ✦ *Five rustic tent sites with picnic tables and parking*
- ✦ *One group site for 25 people max. (6 tents) All with adjacent parking (totaling 30 spaces)*
- ✦ *Two vault toilets*
- ✦ *Additional parking for 15 vehicles, one school bus, and 6 horse trailers*

### ***The Big Hole Rim Improvements***

The Big Hole rim is a special place. From the rim, mule deer, elk, bear, mountain lion, eagles, vultures, hawks, falcons, bobcats, rattlesnakes, fox, and a variety of other species have been observed. Hiking, equestrian, and mountain biking trails will lead from the rim into The Big Hole and beyond.

Any proposed development shall only occur on the rim plateau, set back at least 20 feet from the edge; this might include an overlook, interpretive, regulatory and wayfinding signage, and trailheads. Trailhead and overlook facilities should be designed so that they are set back far enough to ensure there are no sight lines from the bottom of The Big Hole. Other than trail development, no facilities will be developed below the rim.

### ***Trails***

#### ***Non-Motorized Trail Use***

Hiking, mountain biking and horseback riding will be designated as on-trail only to increase user safety and prevent resource damage. All trails located south of The Big Hole trailhead and campground will be multi-use, unless identified for hiking-only due to steep slopes, erosive soils or sensitive microenvironments. A new hiking-only trail will be developed from the Big Hole Rim Pasture dropping into the canyon to connect with the multi-use system.

On multi-use trails, the 12-heartbeat rule will be implemented to reduce trail impact by limiting group size to no more than 12 people or 6 people and 6 animals, for example. Horses will be prohibited from areas of rare or sensitive plant communities to protect against weed seed dispersal. Horse-drawn carriage use will also be prohibited, except along roads open to public vehicle use.

Trails in the Big Hole will not be paved, oiled, or sealed with calcium carbonate or other chemical coatings. Natural materials will be used. Seasonal closures will be implemented that match those in force on adjacent Larimer County open space properties.

#### ***Trail-Accessibility***

Providing a wide variety of users with an opportunity to experience the Big Hole is a desirable goal. Designing a trail with a gradual slope will provide easy access to the Big Hole Rim from the Big Hole Gateway.



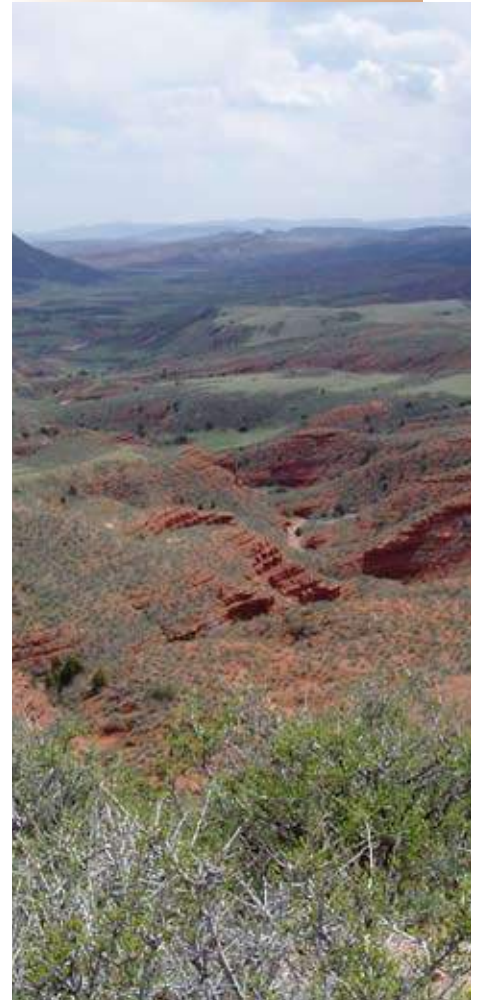
### ***Multi-Use Trails***

Multi-use trails should be routed along existing two-track routes wherever possible to minimize habitat disturbance. New segments of multi-use trail should be designed to equestrian standards to accommodate multiple uses by hikers and bikers. Connections should be made with the regional hike/bike/equestrian trail system planned for Red Mountain and Soapstone.

### ***Education and Interpretive Opportunities***

Numerous cultural and natural resource interpretive opportunities are planned for both The Big Hole Gateway and Rim areas. Educational and interpretive opportunities for outdoor classrooms for school groups and the general public will be developed.

Cultural history interpretive trails and signage will focus on the prehistory peoples and homesteading of the Ranch. Natural resource interpretive trails will focus on the unique geology of the area as well as the biological habitat. Educational opportunities for university archaeological research occur along the rim of The Big Hole.



*View of The Big Hole from the Rim.*



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## Section 5: Sustainable Stewardship: Policies for Managing Belvoir Ranch

To ensure sustainable stewardship of the Ranch and Big Hole properties, a series of management policies have been developed to address public use, safety and security, ranch and landscape management, and the built environment. These are discussed below.

### PUBLIC ACCESS AND USE

**Policy 1.1:** Properties will be opened to public access year round, with limited seasonal closures.

In general, the Ranch shall be open to public access year-round from dawn to dusk. Specific activity areas may allow overnight use by permit. Vehicular access will not be permitted from approximately November 1 to mid-April, or adjusted annually based on snow conditions. Walk-in visitors will be allowed to access the Ranch from Belvoir Gateway Village for winter uses.

**Policy 1.2:** Dogs are allowed, on leash, in designated areas that are staffed by campground hosts and/or volunteer rangers. An exception is made for service dogs. Allowing dogs to run off-leash will be punishable with a fine.

**Policy 1.3:** No off-road or off-trail uses are permitted, except in designated recreation areas.

Hikers, equestrians, and bicyclists are required to stay on designated trails to minimize the creation of “social trails” and the spread of invasive weeds.

A system of gates and cattle guards will be maintained that permits vehicular and trail user access between pastures, while maintaining the integrity of ranching operations and containing animals within designated areas.

**Policy 1.4:** All-terrain vehicles (except where in use by Ranch staff or rangers), off-road motorbikes, snowmobiles, and motorized boats are prohibited. The intent is to prevent impacts from potential off-trail uses, and minimize noise impacts.

**Policy 1.5:** Rock climbing is permitted only in designated areas. Rock climbing is not permitted in areas with raptor nesting sites, or in areas with identified or suspected cultural resources and artifacts.



**Policy 1.6:** Campsites and trails will be closed as conditions warrant.

Camping will be by permit only to regulate and monitor use. Tent and backcountry campers are required to bring their own sources of water. “Leave No Trace” principles will be enforced. Open fires are not permitted in the backcountry.

**Policy 1.7:** Trails will be closed to accommodate seasonal movement of cattle, or during hunting season, or during nesting and breeding seasons.

Temporary or seasonal closures of selected areas of the Ranch may be implemented for movement of cattle for ranching operations, noxious weed control, calving or breeding seasons, and other similar reasons. Notification of closures will be provided at all trailheads, entry points, and recreation areas (including campgrounds) to minimize traffic to trailheads that are closed.

**Policy 1.8:** Encourage education and interpretation of Ranch history and ecology, through a variety of methods. These could include self- or naturalist-led interpretive walks on the established trail system; guided hikes into areas not otherwise accessible to visitors; interpretive field trips for school groups; and community service learning events. Support these activities with a variety of media, including signage, iPod programs, and web-based programs.

## PUBLIC SAFETY AND LAW ENFORCEMENT

**Policy 2.1:** Volunteer rangers and campsite hosts will be hired will aid in monitoring the ranch. Their mission is to promote the safety of visitors while ensuring the protection of Ranch resources. Rangers and hosts will be responsible for educating visitors about rules, regulations and resource protection, issuing warnings and citations, monitoring for misuse, and summoning assistance from the Laramie County Sheriff’s Department in illegal and emergency situations. Rangers will be trained to patrol on foot, mountain bike, or horseback.

**Policy 2.2:** The Wyoming Game and Fish Department will continue to enforce hunting and fishing related activity.

**Policy 2.3** The Laramie County Sheriff Department will continue to provide law enforcement support in addressing criminal activities.

**Policy 2.4:** Public access will be limited to designated roads; use of fire roads and non-designated railroad crossings will be prohibited.

All limited-access roads shall be signed as restricted from public use, and gateways to these areas shall be of a different design than those used on the public roadways.

Agreements will be negotiated for existing at-grade crossings to remain open for use by ranch and emergency vehicles, and for reopening an at-grade crossing of the UPRR 3rd Track that is currently closed between Section #12 and #13, for emergency access to The Big Hole.

**Policy 2.5:** Illegal dumping will be prohibited and punishable by a fine.

**Policy 2.6:** Create an emergency response plan incorporating several departments and agencies to ensure visitor safety. The plan should include Global Positioning System (GPS) coordinates for significant Ranch features, given the large size of the Ranch. All rangers and campsite hosts will be trained in basic emergency medical techniques and will be able to stabilize patients until they can receive medical attention.

**Policy 2.7:** Depending on circumstances, accident victims may be required to pay for some or all of the costs of rescue.

## RANCH AND LANDSCAPE MANAGEMENT

**Policy 3.1:** Continue The Lone Tree Creek Hunter Management agreement with Wyoming Game and Fish Department's Private Lands Public Wildlife Access Program.

The agreement includes restricted access for recreational archery hunting of antelope and deer and firearm hunting of antelope. Wyoming Game and Fish Department shall continue to regulate, monitor and enforce the hunting privileges.

Coordinate hunting zone restrictions or closures of public activity areas during hunting season.

**Policy 3.2:** Existing cattle management infrastructure shall be optimized for cattle unloading in Harriman, Rock Quarry Meadow, and Borie pastures and cattle loading at the Main Headquarters and Missile

Base. Other existing cattle management facilities shall be utilized as long a practical.

**Policy 3.3:** Develop Best Management Practices (BMPs) objectives with Laramie County Conservation District, U.S.D.A. Natural Resources Conservation Service, the Cheyenne Cycling Club, and other agencies and universities. In lease agreements require tenants conform to the Belvoir Ranch Management Plan including all BMPs.

**Policy 3.4:** Control timing for grazing to prevent damage to stream bank when most vulnerable. Manage grazing to maintain healthy riparian and littoral vegetation to protect banks and limit sedimentation and eutrophication. Ensure grazing plans limit livestock access in sensitive riparian corridors and littoral zones for protection of biological resources and weed management.

Monitor the watershed (pastures, trails, roads, drainages) regularly to check for excessive erosion and deterioration.

**Policy 3.5:** Fence cattle out of significant cultural resource areas to prevent erosion, damage and/or loss of cultural features.

**Policy 3.6:** Establish guidelines for off road driving on the part of ranching staff or livestock operators that will minimize natural resource impact.

**Policy 3.7:** Develop a trail closure plan that regulates visitor use in seasons when cattle are being pastured.

**Policy 3.8:** Develop and implement weed management BMPs. These may include BMPs for trail design that minimize the spread of invasive weeds, and spot spraying and controlled burns in selected areas. Efforts should be coordinated with the Red Mountain Open Space Weed Management Plan.

**Policy 3.9:** Suppress wildfires on the Belvoir Ranch high prairie, as grassland burning encourages noxious weed invasion.



## THE BUILT ENVIRONMENT

- Policy 4.1:*** All built facilities (structures, gateways, signage) shall be designed to be compatible with the site's character.
- Policy 4.2:*** Materials and facilities shall be designed to minimize maintenance and capital repair expenditures.
- Policy 4.3:*** Lighting shall be minimized to reflect "Dark Sky" principles.
- Policy 4.4:*** Signage shall provide necessary regulations and wayfinding, but should be kept to a minimum.
- Policy 4.5:*** All utilities shall be located underground where feasible to preserve key views.



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## Section 6: Land Acquisition

### LAND ACQUISITION

Most of the land surrounding Belvoir Ranch is ranchland, held in large ownership parcels greater than a section, 640 acres. These large landholdings are less likely to be subdivided for rural residential lots as long as ranching remains viable.

Prime reasons supporting strategic acquisition of properties adjacent to the Belvoir include buffering open space and critical viewsheds, maintaining and improving wildlife habitat and corridors, and improving ranching capacity and other economic development opportunities. Also important are gaining access to the east end of the Ranch and connectivity to expanded recreation opportunities.

The City should consider acquisitions as opportunities arise. Areas of particular importance are Haygood Canyon to the southwest and land south to the state line. Acquisition plans should also include State held land to the south and east. Land acquisition efforts should be coordinated with other municipal agencies including the Board of Public Utilities to maximize return on investment and community benefit.

Conservation easements are also a useful strategy. Adjacent property owners and land conservation partners should be encouraged to protect lands by placing them under conservation easements.

Finally, “land swaps” or strategic sales of low-value areas of the Ranch could be considered. Any sale or exchange of property should only be undertaken if it can improve the Ranch by acquiring parcels of better quality that meet the needs and goals of an evolving community resource.





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# MEASURING THE ECONOMIC VALUE OF LAND CONSERVATION

SEPTEMBER 2008





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## Measuring the Economic Value of Land Conservation



*The Big Hole property southwest of the City of Cheyenne.*

Land that is protected from development, either for recreational use, habitat conservation, or natural resource protection, has a tangible value that can be hard to quantify. One of the primary benefits of open space and conservation lands is increased quality of life. While the value of quality of life is not often quantified, such essential amenities have a direct link to economic development and community vitality that can be measured in other ways.

Additional value and benefits from open space come from the value of the services provided by intact and healthy ecosystems, and user benefits to those who participate in the active and passive recreation opportunities provided by open space. This section describes the economic and community development benefits of open space and provides examples from economic literature on the value of open space and associated user benefits.

★ ***The primary benefits of open space and conservation lands include increased quality of life, economic value, and intact and healthy ecosystems.***



★ **While the value of quality of life is not typically quantified, high quality of life correlates with positive economic growth.**

## QUALITY OF LIFE AS A COMPETITIVE EDGE

Quality of life has a broad meaning in urban planning and economic development. It refers to the livability of an area as defined by numerous community characteristics and indicators such as public safety, quality of educational opportunities, entertainment and cultural amenities, as well as environmental quality and access to open space, parks, and recreation opportunities. While the value of quality of life it is not typically quantified, high quality of life correlates with positive economic growth.

- A USDA study focused on natural amenities such as a favorable climate, topographic variation, and water features showed that areas with a higher concentration of natural amenities achieved higher population growth rates from 1970 to 1996 than less scenic areas<sup>1</sup>.
- Similarly, a 1998 report by the Federal Reserve Bank of Kansas City found that the most scenic rural areas experienced growth in non-farm self-employment (sole proprietors) of nearly 4 percent per year while the least scenic areas grew at half that rate<sup>2</sup>.

## BUSINESS AND TALENT ATTRACTION

Metropolitan areas in the U.S. are transitioning from heavy industry and manufacturing towards more knowledge-based or ‘people intensive’ industries. A local example of this transition is the locating of the National Center for Atmospheric Research (NCAR) supercomputing facility in Cheyenne’s North Range Business Park. This facility is creating interest in Cheyenne as a location for private sector technology and computing businesses. This facility therefore has the potential to create spin-off benefits in coming years from new technology companies locating in Cheyenne and generating additional high paying jobs.

Knowledge industries rely less on access to raw materials, heavy infrastructure, and energy supplies, and more on skilled labor. As a result, attracting a skilled and talented labor pool is key to economic development for knowledge-based industries. A city’s success in economic development is therefore tied to its ability to attract and retain highly educated professional employees and entrepreneurs.

1 McGranahan, D.A. (1999). *Natural Amenities Drive Rural Population Change*. U.S. Department of Agriculture, Economic Research Service, Food and Rural Economics Division. Agricultural Economic Report No. 781. September.

2 Henderson, J. and K. McDaniel. (1998). “Do Scenic Amenities Foster Economic Growth in Rural Areas?” *Regional Economic Digest, Federal Reserve Bank of Kansas City* First Quarter: 11-16.



‘Knowledge workers’ often have more flexibility than others in choosing where to live, and quality of life is often a major factor in their decisions. Economic development and company relocation studies continue to show that quality of life is an important factor for individuals in deciding where to live and work, and for companies in deciding to relocate or expand. Some studies have found that environmental quality has ranked very highly in location choices, often equal to, or above, housing, the cost of living, and good schools.

## COMPENSATION AND COMPETITION

The transition to knowledge-based and people intensive “footloose” industries has important economic development ramifications. To some extent, employees of these firms are sometimes willing to take a smaller salary in places that offer higher amenities than in places with below average quality of life. Conversely, firms located in areas with a low quality of life find they need to pay more to attract talent.

- A 1991 study of 174 Colorado companies that chose to relocate to Colorado found that among businesses of 40 people or less, 26% stated open space and recreation opportunities as the primary reason for their relocation decision<sup>3</sup>.
- A 2003 study analyzed the effect between proximity to national parks, lakeshores, seashores, and recreation areas on the 90 largest metropolitan areas. Their results indicate that individuals are willing to take a 4.0 percent pay cut to work in an area with these amenities located 100 miles closer<sup>4</sup>.

As communities invest in and pursue economic development, they should consider investments in quality of life and quality of place (the built environment, parks, and open space) as a key component of a long-term community and economic sustainability strategy.

The City of Cheyenne’s investments in revitalizing Downtown Cheyenne, and its investments in the Greater Cheyenne Greenway are all investments in the quality of place and quality of life. The City’s investment in the Belvoir Ranch and Big Hole properties is an extension of these existing policies and strategies, and an investment in regional economic growth.



★ **As communities invest in and pursue economic development, they should consider investments in quality of life and quality of place (the built environment, parks, and open space) as a key component of a long-term community and economic sustainability strategy.**

3 Crompton, J.L., Love, L.L., & More, T.A. (1997). Characteristics of companies that considered recreation/parks/open space to be important in (re)location decisions. *Journal of Park and Recreation Administration* 15(1), 37-58.

4 Schmidt, L. and P.N. Courant. (2006). Sometimes Close Is Good Enough: The Value of Nearby Environmental Amenities. *Journal of Regional Science*. (46)5, 931-951.



- ★ **A 2001 study of 16,747 single family homes in Portland, Oregon found that homes within 1,500 feet of a natural park supported a 16% premium in value<sup>9</sup>.**
- ★ **In 2005-2006, the Wyoming Legislature created the “Wildlife and Natural Resource Trust,” with funding of approximately \$40 million to support projects that enhance habitat and natural resource values across the state.**

## ECOSYSTEM VALUE

Measuring the value of natural systems is a relatively new branch of economics pioneered in the last ten years by both economists and ecologists. The field aims to quantify public benefits that are not typically recognized or valued in market transactions. A 1997 study in the journal *Nature* estimated the value of benefits associated with the world’s ecosystems at \$33 trillion annually<sup>5</sup>. Services to the public from ecosystems include gas regulation, climate regulation (i.e., oxygen, carbon dioxide, nitrogen dioxide), water regulation, water supply, stormwater management, erosion control, soil formation, waste treatment, and pollination, amongst others. Additional examples of the economic value of natural systems are provided below:

- Research has identified a \$1 to \$100 ratio of investment to benefit on the preservation of intact ecosystems<sup>6</sup>.
- Tree canopy benefits in Ft. Collins, CO have an estimated one-time storm water management value of \$10,100,000 and annual benefits attributable to air pollution removal and storm water management of \$1,500,000 annually<sup>7</sup>.
- Over 100,000 different animal species — including bats, bees, flies, moths, beetles, birds, and butterflies — provide free pollination services. One third of human food comes from plants pollinated by wild pollinators. The value of pollination services from wild pollinators in the U.S. alone is estimated at \$4 to \$6 billion per year.<sup>8</sup>
- A 1997 Cornell University study estimated the economic and environmental benefits of biodiversity in the U.S. alone at \$319 billion. The Cornell study counted natural services of a diverse biota, including organic waste disposal, soil formation, biological nitrogen fixation, genetic resources to increase food crop and livestock yields, biological pest control, plant pollination, pharmaceuticals, and sequestration of carbon dioxide that would otherwise contribute to global warming.<sup>9</sup>

Valuing the benefits of ecosystem services is, however, a very new field and relies on a host of macroeconomic assumptions to derive numeric estimates. Because of this, the estimates summarized above should be interpreted as broad ranges of potential benefits.

<sup>5</sup> Costanza, Robert (1997). The value of the world’s ecosystem services and natural capital. *Nature*. 387, 253-259.

<sup>6</sup> (2002, Aug. 13). Investing In Environment Pays Off At 100-1, Say Researchers. Retrieved February 26, 2008, from ScienceDaily Web site: <http://www.sciencedaily.com/releases/2002/08/020812070301.htm>

<sup>7</sup> American Forests. (2001). Regional Ecosystem Analysis for Metropolitan Denver and Cities of The Northern Front Range, Colorado [Brochure]. Washington, D.C.

<sup>8</sup> Ecological Society of America (2000). What are Ecosystem Services Worth?

<sup>9</sup> Pimental, David, et. al. (1997) Economic and Environmental Benefits of Biodiversity. *BioScience*. 47, 747-757.

## REAL ESTATE/PROPERTY TAX BENEFITS

It has been well established that proximity to open lands and conservation areas enhances property values<sup>10</sup>. The “proximate principal” describes the correlation between higher property values and proximity to open lands, natural areas, and parks.

- A 2001 study of 16,747 single family homes in Portland, Oregon found that homes within 1,500 feet of a natural park supported a 16% premium in value<sup>11</sup>.
- Conversion of one acre of developable pasture land in Maryland to conservation land increased the average value of the adjacent neighborhood residential properties by \$3,307<sup>12</sup>.
- A 2001 study in Lawrence, KS demonstrated a 9% premium for houses adjacent to undeveloped prairie land<sup>13</sup>.

Although less research has been conducted on community-wide benefits as a result of open space purchases, the following studies found a positive correlation.

- A 1996 analysis of Boulder, CO open space purchases found that the 15,000 acres purchased between 1981 and 1995 led to an overall increase of 3.75% in the City’s real estate values. Importantly, the study controlled for changes in employment, rents, the housing stock, as well as vacancies and mortgage rates<sup>14</sup> to isolate the effect of increased open space.
- A 1971 study of 15 parkland acquisitions in Pennsylvania Townships by Pennsylvania State Parks compared changes in property values to Townships without parkland. The study reported that Townships with newly acquired parkland experienced a 6% increase in land value in the five years after acquisition<sup>15</sup>.

10 Resources for the Future. (2005). *The Value of Open Space: Evidence from Studies of Nonmarket Benefits* [Brochure]. Washington, D.C.: Virginia McConnell and Margaret Walls.

11 Lutzenhiser, M., and N. Noelwahr. (2001). The effect of open spaces on a home’s sale price. *Contemporary Economic Policy* 19(3): 291-298.

12 Irwin, E.G. (2002). The Effects of Open Space on Residential Property Values. *Land Economics* 78(3): 698-704.

13 Earnhard, Dietrich (2001). Combining Revealed and State Preference Methods to Value Environmental Amenities at Residential Locations. *Land Economics* (1):12-30.

14 Riddel, Mary (2001). A Dynamic Approach to Estimating Hedonic Prices for Environmental Goods: An Application to Open Space Purchase. *Land Economics* 77(4):494-512.

15 Epp, Donald J (1971). The effect of public land acquisition for outdoor recreation on the real estate tax base. *Journal of Leisure Research* 3(1), 17-27.

✦ **A 1993 study measuring the for ranchland preservation in Western Colorado found that protecting ranchlands was worth between \$111 and \$186 (in 2006 dollars) per household.**



✦ **In areas where development pressure is high, open lands have a higher value to people.**





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## **Belvoir Ranch and the Big Hole Properties: A Case Study**

### **INTRODUCTION**

Belvoir Ranch was purchased by the City of Cheyenne in 2003 as a cooperative effort between the City of Cheyenne's Board of Public Utilities and the City Public Works Landfill Fund. The City paid \$5.9 million for over 17,000 deeded acres along with rights to 3,400 acres of land leased from the State of Wyoming. Stewardship partners include the Laramie County Conservation District and the National Resource Conservation Service.

The adjacent Big Hole property consists of 1,000 acres of rim pasture and 800 acres of spectacular canyon scenery at the Wyoming/Colorado border. It is part of the regional area identified as the Laramie Foothills/ Mountain to Plains Project which is sponsored by Larimer County, the City of Fort Collins, The Nature Conservancy, and the Legacy Land Trust. This effort will protect 55,400 acres between Fort Collins and Cheyenne, creating a mountain to plains conservation zone of approximately 140,000 acres. This land was acquired in 2005 for \$525,000 from the Nature Conservancy as part of a multi-state open space initiative. The Nature Conservancy holds a conservation easement on the property, which is one of the first created in the State of Wyoming under new 2005 legislation.



*Aerial view of Lone Tree Creek a valuable ecological resource on Belvoir Ranch.*



## VALUE OF ACTIVE AND PASSIVE RECREATION

Using research conducted by the U.S. National Forest Service (USFS), the value of the potential recreation activities at Belvoir Ranch is estimated in **Table 1**. This survey attempts to quantify economic benefits of various recreational activities, based on average participation rates for each activity, the approximate times per year a user participates, and the perceived dollar value for each day of participation<sup>1</sup>.

Participation rates for various outdoor activities in the Forest Service survey, which represent national averages, were multiplied by Cheyenne's population over the age of 18 (42,423 in 2007) and the average number of times people participate in each activity to calculate total user days. As shown, Cheyenne's population is estimated to generate 10,000 user days of mountain biking, 20,500 user days of camping, and so on.



The value of ranchland protection alone is estimated at \$3.3 million to Cheyenne residents per year, as shown<sup>2</sup>. In addition, the value of recreational activities such as fishing is estimated at \$1.9 million, hiking at \$2 million, and wildlife viewing at \$3.4 million. Mountain biking has a high value per user day, although it has lower participation rates. Mountain biking is estimated to be worth \$800,000 per year to Cheyenne residents.

Total annual user benefits are estimated to be \$13.8 million for all of the activities shown. This compares favorably to the \$5.9 million the City paid for the 17,000 acre property. While preservation alone provides significant value, providing for additional recreational opportunities is expected to have additional economic benefits for the City and the region.



<sup>1</sup> USDA, Forest Service. (October 2005). *Updated Outdoor Recreation Use Values on National Forests and Other Public Lands* (General Technical Report PNW-GTR-685). Pacific Northwest Research Station.

<sup>2</sup> Rosenberger, Randall, and Walsh, Richard G. (1997). Nonmarket Value of Western Valley Ranchland Using Contingent Valuation. *Journal of Agricultural and Resource Economics*. 22 (2), 296-309.



**TABLE I**  
**Value of Active and Passive Recreation Activities to Cheyenne Residents**

Ranch Activities	Participation	Anticipated Users <sup>1</sup> (per year)	Average # of Times per year	User Days	Perceived Value per Day <sup>2</sup>	Annual User Benefit
Mountain Biking	5%	2,121	4.8	10,171	\$78	\$800,000
Backpacking	7%	2,970	8.1	24,158	\$55	\$1,330,000
Camping	18%	7,636	2.7	20,503	\$39	\$810,000
Fishing	28%	11,878	3.2	38,249	\$50	\$1,910,000
Horseback Riding	6%	2,545	4.8	12,205	\$19	\$230,000
Hiking	18%	7,636	8.1	62,120	\$33	\$2,030,000
Wildlife Viewing	16%	6,788	11.3	76,701	\$45	\$3,440,000
Ranchland Protection <sup>3</sup>	N/A	23,953	N/A	23,953	\$139	\$3,330,000
<b>Total/Average</b>	<b>14%</b>			<b>268,059</b>	<b>\$52</b>	<b>\$13,880,000</b>

Source: Plan Cheyenne; US Forest Service, Economic & Planning Systems

<sup>1</sup> National Participation Average multiplied by Cheyenne's < 18 Population of 42,423.

<sup>2</sup> Willingness to Pay in 2006 dollars

<sup>3</sup> "Users" are the number of households in Cheyenne's metropolitan area.

★ **Total annual user benefits are estimated to be \$13.8 million for the activities shown. This compares favorably to the \$5.9 million the City paid for the 17,000 acre property.**

★ *The Belvoir Ranch/ Big Hole example illustrates the value that is preserved when strategic open lands are protected from development. The cost to replace such a resource at a later date would likely make its replacement infeasible.*

## BELVOIR RANCH REPLACEMENT VALUE

The replacement value of open space or conservation lands can be estimated by examining the market value of land nearby that can be sold for private development. If Belvoir Ranch was developed, these land values provide a range of estimates for the cost to replace the open space provided by the Ranch. In the foothills west of Cheyenne raw land (without development approvals) suitable for residential development is valued between approximately \$900 and \$1,000 per acre, as shown in Table 2. Applied to the 17,000 acre Ranch, this indicates a replacement value of \$15.3 to \$17 million. Land that is taken from raw land with no development approvals to subdivided residential lots, typically 30 acres in size, is valued between \$1,800 and \$2,300 per acre. As subdivided residential land, the replacement value of Belvoir Ranch is estimated at \$30.6 to \$39.1 million.

Typically, large bulk land sales have a lower per acre price than the individual lot sales shown below. However, this example illustrates the value that is preserved when strategic open lands are protected from development. The cost to replace such a resource at a later date would likely make its replacement infeasible.

**TABLE 2**  
**Estimated Belvoir Ranch Replacement Value**

Description	\$ per Acre		Belvoir Ranch Acres	Replacement Value	
	Low	High		Low	High
"Raw" land (unentitled, undeveloped)	\$900	\$1,000	17,000	\$15,300,000	\$17,000,000
Large Residential Lots (+/- 30 ac)	\$1,800	\$2,300	17,000	\$30,600,000	\$39,100,000
<b>Belvoir Ranch Purchase Price</b>			<b>17,000</b>	<b>\$5,900,000</b>	

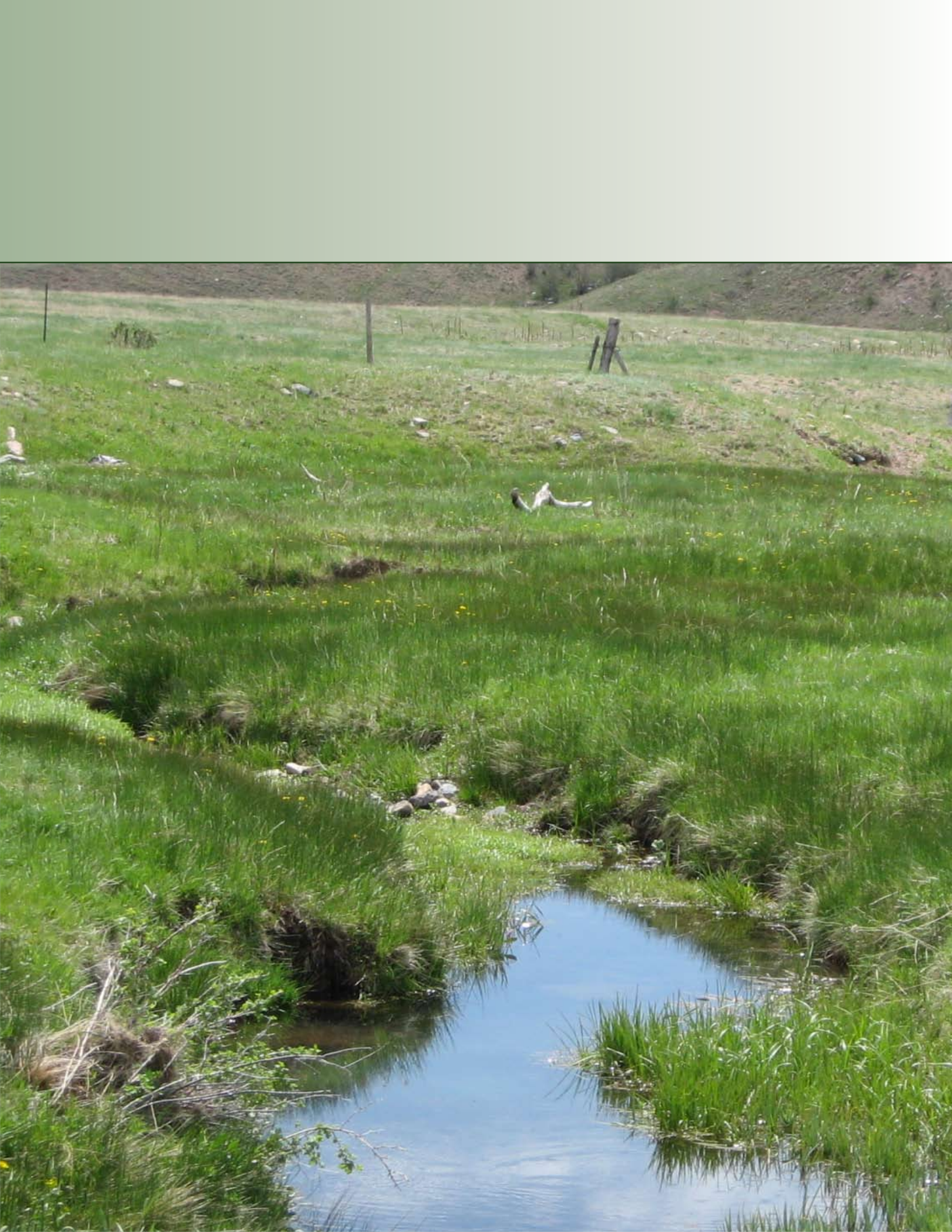
Source: Economic & Planning Systems

It should be noted that these estimates are provided in 2008 dollars. As land prices often increase over time, applying a 3 percent inflation rate would mean that in 2025, the ranch property would be worth between \$25 and \$65 million.

Given its value as community legacy and the economic benefits that are expected to be derived, preserving its intrinsic resource values and making them available to Cheyenne residents and visitors, should be an asset to the quality of life in the region.









# BUILD

SEPTEMBER 2008





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## Acknowledgements

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## Section 1: Introduction

### PURPOSE OF THIS DOCUMENT

**Build** is the fourth and final element of the Belvoir Ranch Master Plan, which will become a component of *PlanCheyenne*, the area Comprehensive Plan. Focused on plan implementation, it builds on three previous phases of work:

- **Snapshot**, which involved collecting, assembling and analyzing relevant data on existing site conditions;
- **Structure**, which established the building blocks that shape the physical character of the Belvoir Ranch and Big Hole properties and conceptualizes the community's vision; and
- **Shape**, which documents the Master Development Plan and provides policies for managing the properties so that their significant qualities and features will be preserved for future generations of Cheyenne residents.

**Build** describes the overall development plan, and identifies 5- and 15-year phasing strategies and estimated costs of each, expressed in 2008 dollars. Specific strategies for financing capital development, including use of City funds and on-site revenue generation, are described and compared with approaches taken by a number of "peer" communities with large open space holdings. **Build** also addresses anticipated operations and maintenance requirements and strategies for providing these services in an economically sustainable manner. The document concludes with identification of short-term action steps for finance and administration.



Wildflowers found on Belvoir Ranch

### PURCHASING THE BELVOIR RANCH AND THE BIG HOLE PROPERTIES

Located 16 miles west of Cheyenne, Belvoir Ranch and The Big Hole consist of 18,800 acres with an additional 3,400 acres of land leased from the State of Wyoming. The master plan for these properties encompasses both purchased and leased lands, with proposals for improvements on leased lands subject to the State Land Board approval process described later in this document.

The 2003 purchase of Belvoir Ranch was funded by The City of Cheyenne Board of Public Utilities (BOPU) to expand the City's water supply, and by the Department of Public Works for a possible landfill site. Purchase of the Ranch property allows for expansion of the City's infrastructure as it grows, as well as for compatible recreation. Ranching operations are desired to be continued as a component of a sustainable "working landscape." Additionally, the City has identified potential economic benefit from other types of development that are compatible with the Ranch's natural features.

The Big Hole was purchased in 2005 from The Nature Conservancy, which holds a conservation agreement on the property. It consists of 1,000 acres of rim property and 800 acres of spectacular red rock canyon scenery. It is part of a regional area identified as the Laramie/Foothills Mountain to Plains Project, which is sponsored



★ While the value of quality of life is not typically quantified, high quality of life correlates with positive economic growth.

by Larimer County, the City of Fort Collins, the Nature Conservancy, and the Legacy Land Trust. The property will remain natural, allowing selected, low-impact activities such as hiking or horseback riding. The Big Hole will be managed through a partnership between the City of Cheyenne, Larimer County, and the Nature Conservancy.

## HOW CAN OPEN SPACE BENEFIT CHEYENNE'S REGIONAL ECONOMY AND QUALITY OF LIFE

Land that is protected from development, either for recreational use, habitat conservation, or natural resource protection, makes tangible contributions to quality of life, which in turn translates into economic advantages. These benefits can transcend the communities in which the protected areas are located, to benefit the surrounding region as well. Previous research suggests that these benefits can take a number of forms, as summarized below.

### *Quality of Life as a Competitive Edge*

Quality of life refers to the livability of an area, defined by indicators such as public safety, quality of educational opportunities, entertainment and cultural amenities, environmental quality and access to open space, parks, and recreation opportunities. Studies have shown that these natural amenities are attractors: one study in particular has shown that areas with high concentrations of these natural features grew faster between 1970 — 1996, than those that lacked these amenities<sup>1</sup>.

### *Business and Talent Attraction*

Metropolitan areas in the U.S. are transitioning away from heavy industry and manufacturing, toward more knowledge-based or 'people intensive' industries. Attracting a skilled and talented labor pool is key to the continued growth of these industries. Economic development and company relocation studies continue to show that quality of life is an important factor for individuals in deciding where to live and work, and for companies in deciding where to relocate or expand. For example, a 1991 study of 174 companies that chose to relocate to Colorado found that among businesses of 40 people or less, 26% stated open space and recreation opportunities as the primary reason for their relocation decision<sup>2</sup>.

### *Real Estate/Property Tax Benefits*

It has been well established that proximity to open lands and conservation areas

1 McGranahan, D.A. (1999). *Natural Amenities Drive Rural Population Change*. U.S. Department of Agriculture, Economic Research Service, Food and Rural Economics Division. Agricultural Economic Report No. 781. September.

2 Crompton, J.L., Love, L.L., & More, T.A. (1997). Characteristics of companies that considered recreation/parks/open space to be important in (re)location decisions. *Journal of Park and Recreation Administration* 15(1), 37-58.

enhances property values, by as much as 16 percent<sup>3</sup>. Although less research has been conducted on community-wide benefits as a result of open space purchases, a 1996 analysis found that the 15,000 acres purchased in Boulder, CO between 1981 and 1995 led to an overall increase of 3.75% in the City's real estate values<sup>4</sup>.

### *Value of Ranchland Protection and Active and Passive Recreation*

Research conducted by the U.S. National Forest Service (USFS), estimates the value of ranchland protection at \$3.3 million annually in the Cheyenne region. The annual value of recreational activities is also significant: fishing is estimated at \$1.9 million, hiking at \$2 million, and wildlife viewing at \$3.4 million. These figures also include the “multiplier effects” of related purchases of equipment, lodging, and other consumables. With these activities available at Belvoir Ranch and The Big Hole, economic benefits should also accrue within the region.

### *Ecosystem Value*

Additional value and benefits from open space come from the value of the services provided by intact and healthy ecosystems. Measuring the value of natural systems is a relatively new field pioneered in the last ten years by economists and ecologists. This field aims to quantify public benefits that are not typically recognized or valued in market transactions. For example, a 1997 Cornell University study estimated the economic and environmental benefits of biodiversity in the U.S. alone at \$319 billion. The Cornell study counted natural services of a diverse biota, including organic waste disposal, soil formation, biological nitrogen fixation, genetic resources to increase food crop and livestock yields, biological pest control, plant pollination, pharmaceuticals, and sequestration of carbon dioxide that would otherwise contribute to global warming.<sup>5</sup>

✦ *The value of ranchland protection has been estimated at \$3.3 million to Cheyenne residents per year.*



## **HOW DOES THIS PLAN RELATE TO PLAN CHEYENNE**

Cheyenne is a community with a rich planning tradition—a tradition that has shaped and guided planning for the future development of Belvoir Ranch. Two plans, in particular, are important to mention.

In 2002, the Greater Cheyenne Chamber of Commerce launched ***Vision 2020***, a community visioning process. At the time, planners noted that “...Cheyenne

3 Resources for the Future. (2005). *The Value of Open Space: Evidence from Studies of Nonmarket Benefits* [Brochure]. Washington, D.C.: Virginia McConnell and Margaret Walls.

4 Riddel, Mary (2001). A Dynamic Approach to Estimating Hedonic Prices for Environmental Goods: An Application to Open Space Purchase. *Land Economics* 77(4):494-512.

5 Pimental, David, et. al. (1997) Economic and Environmental Benefits of Biodiversity. *BioScience*. 47, 747-757.

## Cheyenne's Growth Vision

- ✦ *Foundation 1: Growing as a Community of Choice. Cheyenne will be a community with a reputation as a great place to live and do business.*
- ✦ *Foundation 2: Creating Livable "Hometown" Neighborhoods. Cheyenne will "raise the bar" on the quality of new and infill residential development.*
- ✦ *Foundation 3: Fostering Vital Employment and Activity Centers. Cheyenne will support a solid economy based on family-wage jobs and a vibrant business community.*
- ✦ *Foundation 4: Developing a Connected and Diverse Transportation System.*
- ✦ *Foundation 5: Celebrating our Character and Varied Heritages. This includes preserving historic areas and rural ranching and cultural landscapes.*
- ✦ *Foundation 6: Creating a legacy of Parks, Open Spaces and Trails. This includes conserving "significant" open space lands that contribute to community character.*
- ✦ *Foundation 7: Developing in a Fiscally Responsible Way. Efficient use of both public and private resources will be promoted.*

is poised to become the northern anchor for the booming Front Range economy and a complete community that attracts people because of its quality of life."

The community-driven vision stresses the importance of the City's history, image and quality of life to economic health and residents' well-being.

Important goals that followed from this vision included protecting natural areas, conserving water, supporting the City's agricultural areas, and protecting key wildlife habitat. Significant in this planning process was the connection made between protecting valued resources and community quality of life, and that open space could act as a "draw" that would stimulate positive economic investment and prosperity.

In 2006, the City completed *PlanCheyenne*, a major update to the area Comprehensive Plan. *PlanCheyenne* establishes the framework for planning at the Belvoir Ranch and Big Hole properties. It reinforces and emphasizes the relationship between preservation of open lands, quality built environments, quality of life, and economic growth and prosperity; this helps us to understand how this vast property can be a significant asset for Cheyenne. Ultimately, this master plan will be adopted as a Special Area Plan under *PlanCheyenne*.

## HOW DOES OPEN SPACE CONTRIBUTE TO CHEYENNE'S SMART GROWTH STRATEGY?

*PlanCheyenne* presents a strong platform for "smart growth" in Cheyenne. "Smart growth" advocates a number of sustainable land use principles, including compact development, a mix of land uses, walkable neighborhoods, preservation of open space and natural features, varied and connected transportation options, and a strong sense of place. This "smart growth" vision is translated into the seven foundation principles, illustrated in the sidebar, that are intended to shape future growth in Cheyenne.

The Belvoir Ranch and Big Hole properties support the City's "smart growth" strategy in three key ways:

- Preserving large expanses of open space can encourage more compact development patterns in the City; with such a large open space as a resource, demand for large-lot or "ranchette" subdivisions may be reduced — with positive impacts on transportation networks and watershed health.
- Preserving such a large expanse of the region's Western heritage can afford an opportunity for activities such as horseback riding, rodeo, and wagon rides — allowing opportunities to experience the area's cultural heritage.
- Preserving a large expanse of open space at the edge of the community can provide community shaping or separation from new development outside the City's limits.





## Section 2: Summary of the Master Development Plan and Phasing Strategy

### OVERVIEW

This section summarizes the overall Master Development Plan, including recreation and energy and resource development elements. To guide implementation, short-term (5-year) and longer-range (15-year) phasing plans, and associated capital cost estimates, have been developed that respond to community preferences.

The 5-year plan includes elements that could be constructed in whole or part, through existing public funding sources, grants, or with volunteer assistance. It illustrates that many low-impact recreational activities that respond to community needs and preferences, could be introduced in an affordable and sustainable manner.

The 15-year plan includes additional elements that could be provided through public funding, but also through private operators, such as an RV campground. It is anticipated that these elements would be constructed as community needs dictated and as sustainable funding sources were identified.

Energy and resource development is considered separately, because these elements can proceed independently of recreational improvements, and in the case of wind energy or solar power, might even be used to fund the development of such improvements.

Costs of development of these resources have not been estimated, largely because they will be financed through different mechanisms from the recreational improvements, but also, in the case of wind energy, because additional engineering investigations need to be undertaken.

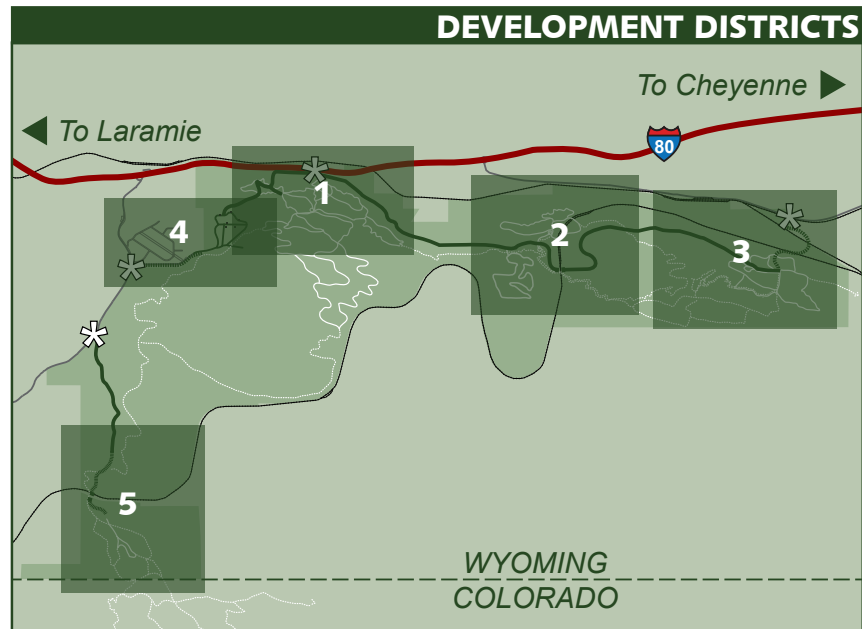
### SUMMARY OF THE MASTER DEVELOPMENT PLAN

The Master Development Plan, developed through a community-driven process, illustrates proposals for possible future activities at the Ranch and The Big Hole. They include:

- Recreational activities, including fishing, swimming, hiking, biking, horseback riding, camping (RV, tent, and primitive backcountry sites), a links-style golf course, a freeride mountain bike park, frisbee golf, and archery practice areas.
- Special events, which could be staged at the former missile silo site or at a new Retreat/Conference Center.
- Educational opportunities, offered at a new Visitor Center, through interpretive exhibits within each development district, or through special activities like chuckwagon or trail rides or guided tours.
- Potential reservoir storage for Cheyenne's water supply; reservoirs could also provide for passive recreational use, like fishing and swimming.
- Continued ranching and grazing, to maintain the site's heritage as a "working landscape."
- Possible wind energy and/or solar power generation.

These facilities are reached from four primary access roads, including Belvoir Road, which traverses the site, and three secondary, controlled access roads that terminate at specific activity nodes. A network of short- and long-loop trails provides opportunities for novice and experienced hikers, bicyclists, and horseback riders.

It should be noted that the plan illustrates suitable locations for uses and opportunities that could be feasible. It does not imply that all improvements will be constructed. Ongoing public surveys of demand for specific facilities will be conducted to determine if and when specific improvements are constructed.



## DEVELOPMENT DISTRICTS

Belvoir Ranch and The Big Hole have been planned as five discrete activity areas, or Development Districts, as shown on the key map below.

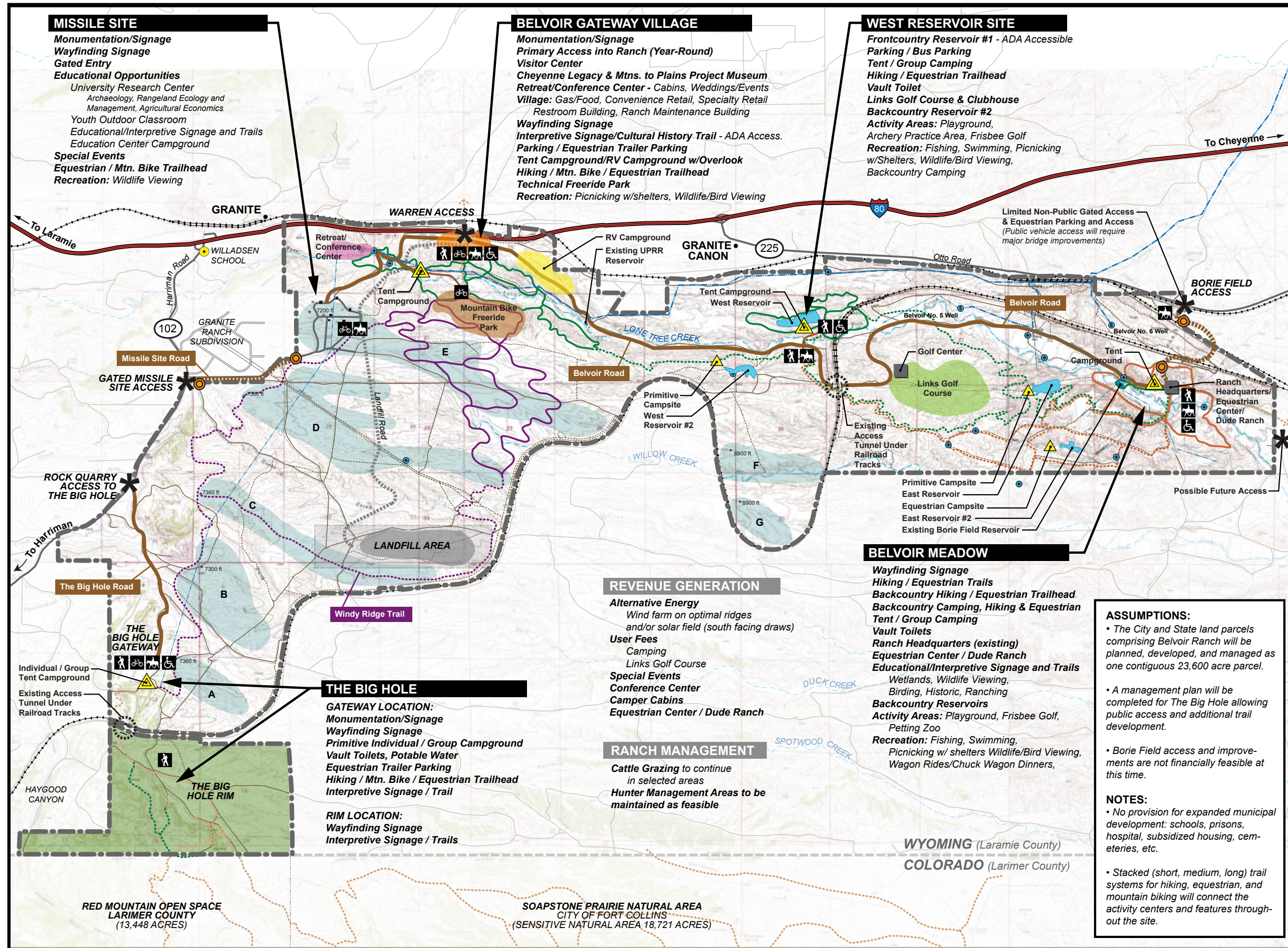
1. **The Belvoir Gateway Village** serves as the gateway into the Ranch and to metropolitan Cheyenne. It is the most intensely developed zone and will accommodate a large volume of visitors with a high level of service.
2. **The West Reservoir Site** offers the potential to be developed as a family-oriented water-related activity area.
3. **Belvoir Meadows** is envisioned as a family-oriented animal-related activity area. It will also provide trailhead access to the Ranch backcountry for hikers, mountain bikers, and equestrian users of various skill levels.
4. **The Missile Site**, if made safe and secure for public access and use, could provide a venue to stage special events and educational opportunities. Gated access off Harriman Road will provide a mechanism for fee collection and controlled access.
5. **The Big Hole Gateway and Rim** will remain rustic, offering opportunities for hiking, horseback riding, and scenic viewing.



# **INSERT 11x17**

## **Master Development Plan**





MASTER DEVELOPMENT PLAN

- ACCESS POINT
- GATED ACCESS
- CAMPGROUND / CAMPSITE
- TRAILHEAD (HIKING / MTN. BIKING / EQUESTRIAN/ ADA Accessible)
- LARGE EXISTING WELL (BOPU)
- PROPOSED PIPELINE ALIGNMENT (BOPU)
- POSSIBLE FUTURE PIPELINES (BOPU)
- BELVOIR RANCH ROAD
- LIMITED ACCESS ROAD
- LANDFILL ROAD
- INTERSTATE HIGHWAY
- MAJOR ROAD
- GRADED ROAD
- EXISTING TRAIL OR 2-TRACK ROAD
- MAJOR CREEK
- RAILROAD
- RANCH PLANNING BOUNDARY
- THE BIG HOLE CONSERVATION EASEMENT
- ADJACENT PUBLIC OPEN SPACE
- POTENTIAL WIND GENERATION AREA
- PROPOSED RESERVOIR
- EXISTING RESERVOIR

**TRAILS KEY**  
Note: All trails will be multi-use, but different areas of the Ranch have been planned for more intense use by designated user groups.

- HIKING SYSTEM:**
  - Purpose-built frontcountry trails; short, easy loops near activity centers with ADA accessible segments
  - Purpose-built backcountry trails
- MOUNTAIN BIKING SYSTEM:**
  - Purpose-built single-track loops
  - Purpose-built long-distance single-track
- EQUESTRIAN SYSTEM:**
  - Short loops near activity centers
  - Backcountry trails on existing two-track
- REGIONAL CONNECTIONS:**
  - Proposed multi-use backcountry trails for Belvoir Ranch and regional connections



Date: September 2008



NOTE: THE SCALE AND CONFIGURATION OF ALL INFORMATION SHOWN HEREON ARE APPROXIMATE ONLY AND ARE NOT INTENDED AS A GUIDE FOR DESIGN OR SURVEY WORK. REPRODUCTION IS NOT PERMITTED WITHOUT PRIOR WRITTEN PERMISSION FROM THE CITY OF CHEYENNE PLANNING DEPARTMENT.





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## ENERGY AND RESOURCE DEVELOPMENT FUNCTIONS

Several resource development functions, including energy development, have been proposed and/or are being implemented at Belvoir Ranch. Because these functions are independent of recreational uses, it is expected that these elements may be implemented as soon as engineering feasibility assessments and related studies are completed and financing is available.

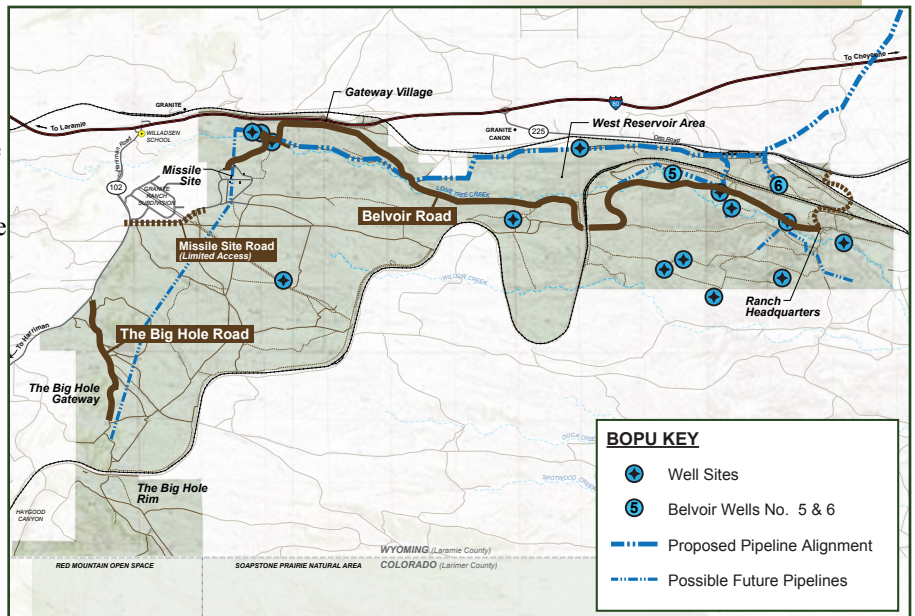
### *Public Utilities: Water Resources And Solid Waste Landfill*

Subsurface water resources will be developed by the Board of Public Utilities (BOPU) for municipal supply. The BOPU has completed preliminary studies identifying potential well sites and interconnecting pipe corridors traversing the northern portion of the Ranch. This plan will be implemented in phases, as City water needs increase.

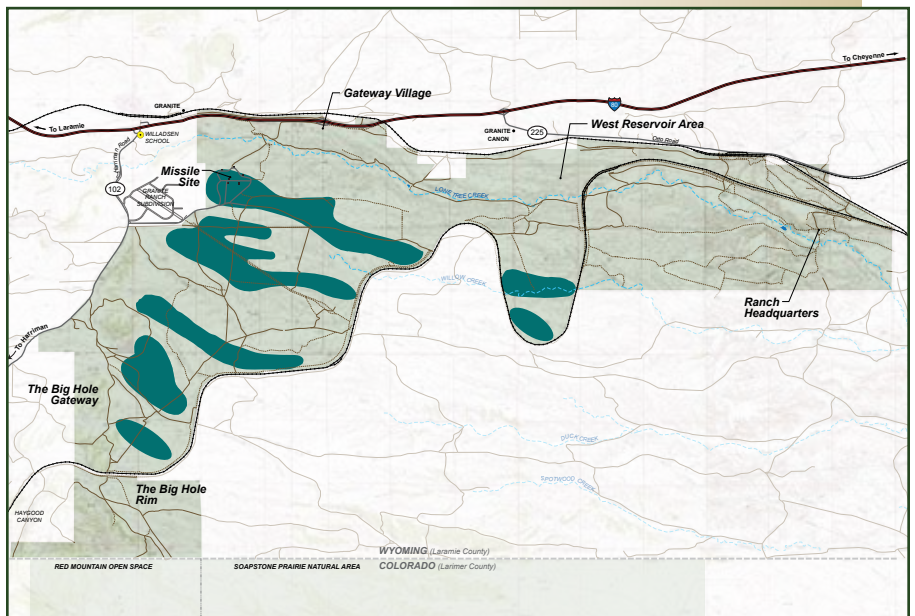
Studies conducted by Cheyenne's Public Works Department have identified a possible future solid waste landfill site on the Ranch property. While economic analyses have shown that other sites and approaches are more cost-effective options, the opportunity to develop the landfill site on the Ranch if needed, has been preserved in this plan.

### *Wind and Solar Energy Opportunities*

Electricity generation using wind turbines is being considered as a revenue opportunity on the Ranch. The site is rated as a "good" to "outstanding" candidate for wind energy development based on a ranking system developed by the National Renewable Energy Laboratory. Seven ridge areas totaling approximately 3,500 acres have been identified as optimal and are shown on the Plan. The limiting factor to development of wind power is the lack of transmission lines serving the site; additional engineering feasibility studies are needed to assess the viability of wind energy development.



Potential well sites and pipe corridors have been identified by the BOPU for municipal water supply.



Seven ridge areas (shown above in blue) have been identified as optimal for wind generation.

## Highlights of the 5-Year Plan

- ✦ Almost 20 miles of hiking trails, including 6.5 miles through the scenic Big Hole area (\$262,680)
- ✦ Over 7 miles of biking trails (\$95,040)
- ✦ Over 28 miles of equestrian access on existing 2-track road, as well as a 5-mile loop trail at the Ranch Headquarters (\$95,040)
- ✦ Two trailheads each with 20-car parking and 5-6 equestrian trailer parking (\$8,000 each)
- ✦ Vault restrooms at the Belvoir Trailhead (\$30,000)
- ✦ Tent Campground at the Belvoir Trailhead (\$45,000)
- ✦ New or improved gravel roads, including earthwork (\$428,780)

**Total Estimated Cost for the 5-Year Plan:**  
**\$1.8 M (2008 dollars)**

While wind turbines are generally compatible with existing grazing activities, because the proposed sites are located within the existing Hunter Management Area, coordination with Wyoming Game and Fish will be necessary to further evaluate the compatibility of these activities. While bow hunting may not pose a threat to wind turbines, rifle hunting may damage facilities.

Solar energy generation may also be a possible revenue-generating use. Additional evaluation of compatibility with grazing and hunting activities would need to be performed to better understand its potential.

## SUMMARY OF 5-YEAR PLAN AND CAPITAL COSTS

The 5-year plan for the Belvoir Ranch and Big Hole properties emphasizes trail connectivity, connecting the Ranch headquarters with The Big Hole. The trail network responds to the public's desire for low-impact uses, that are also comparatively inexpensive to construct. Over 60 miles of trails for hiking, mountain biking, and horseback riding would be constructed, along with two trailheads and associated amenities.

### Belvoir Trailhead

The Belvoir Ranch trailhead, located at the I-80 Warren Exit, will be the primary year-round, access point into the Ranch. The proposed trailhead includes a gravel parking area and equestrian trailer parking, as well as restrooms, a wildlife viewing overlook, and a short ADA accessible trail to the overlook.

Approximately 13 miles of hiking trails and 7 miles of mountain biking trails originate from the Belvoir Trailhead. Equestrian trails follow existing two-track roads from the trailhead to the Missile Site and to the Ranch Headquarters. A 5-mile trail loops around the meadow area beginning at the Ranch Headquarters. An alternative equestrian access point into the Ranch will be available from Otto Road.

### The Big Hole Gateway Trailhead

A second trailhead will provide access to The Big Hole. Visitors will enter at the Rock Quarry Access along Harriman Road, and then will travel a gravel road approximately 2.5 miles to The Big Hole Gateway Trailhead. This trailhead will provide access to approximately 7 miles of scenic, multi-use backcountry trails. Interpretive and wayfinding signage will be provided.

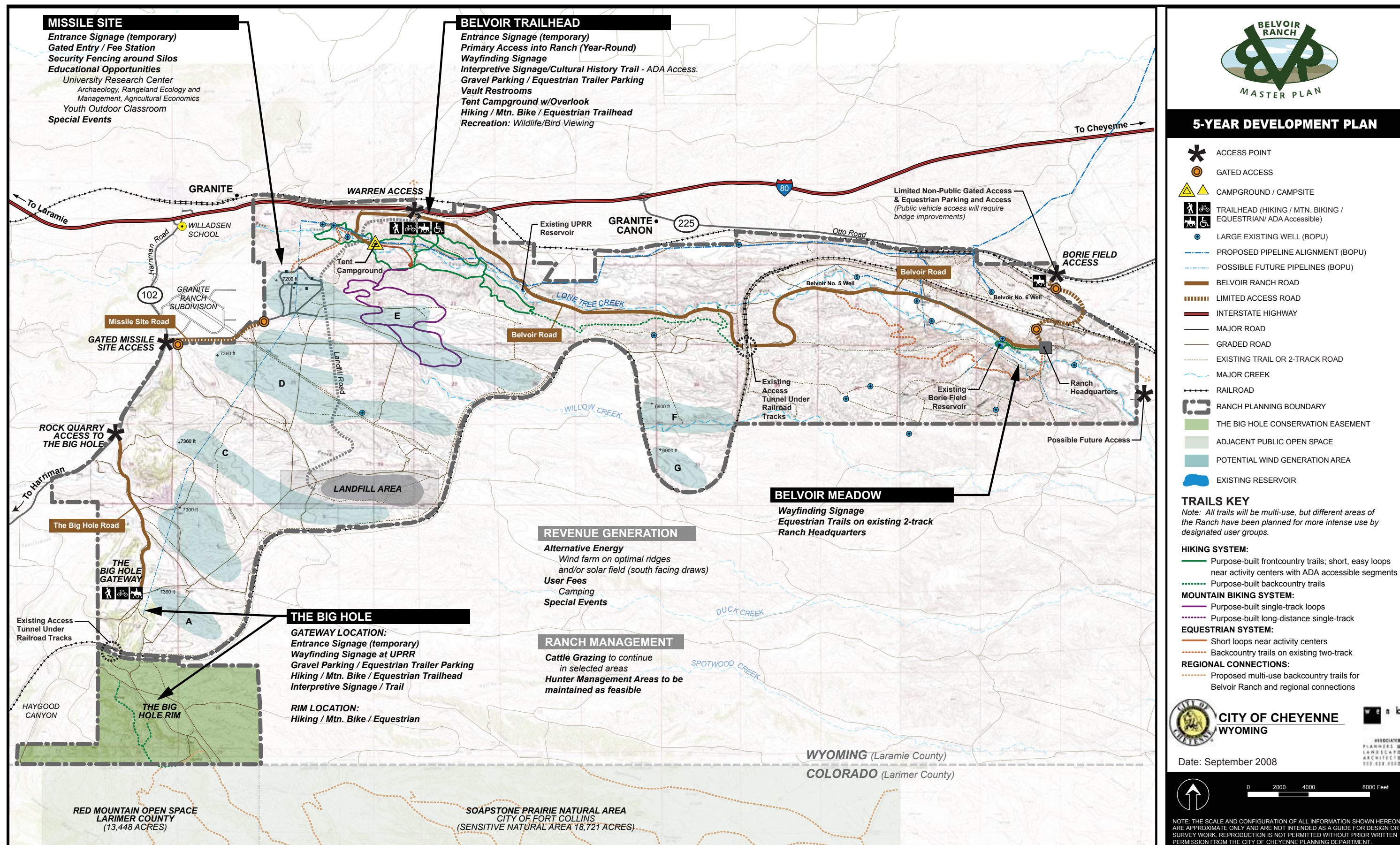
### Missile Site

Gated access to the former Missile Site will be provided off of Harriman Road. If the site is stabilized and public safety improvements are made, the Missile Site could provide a venue for special events.



# **INSERT 11x17 5-year Plan MAP**









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## SUMMARY OF 15-YEAR PLAN AND CAPITAL COSTS

The 15-year plan includes expansion of the proposed trails system, and additional amenities such as an RV campground and links golf course, which might be constructed and/or operated by private concessionaires. It also entails creating a “gateway village” at the Belvoir Trailhead that would provide small-scale retail to support camping, bicycling and equestrian activities. Elements of the 15-year plan are envisioned as being added in response to community preferences and available financing.

### *Belvoir Gateway Village*

The Belvoir Gateway Village is envisioned as the “front door” to Belvoir Ranch and western gateway to the City of Cheyenne. It will serve as a rest stop along I-80 providing convenience retail, food, and specialty retail which will be constructed by private sector partners. Other possible features include a visitor center, a Ranch maintenance building, parking, restrooms, and picnic shelters.

The 15-year plan also proposes an RV campground, with 30 full hook ups, showers, restrooms, and picnic area and overlook. This is also envisioned as being provided by a private partner. A mountain bike freeride park, located on the geologic formation cut by the Lone Tree Creek drainage, will provide exciting terrain for biking enthusiasts at all skill levels.

### *West Reservoir*

Located mid-way across the Ranch and north of Lone Tree Creek and Belvoir Road, development of a reservoir or reservoirs in this area could provide a venue for water-based activities. If recreation uses are permitted, site amenities could include parking for cars and school buses, a fishing pier, swimming beach, picnic shelters and group picnicking, playground, and a vault toilet, as well as a hiking and equestrian trailhead with kiosk.

A stacked-loop hiking trail system will be developed extending out from the reservoir, providing approximately 1.5 miles of easy front-country terrain, as well as an ADA accessible trail section. Additional hiking routes to the Ranch Headquarters and the Belvoir Gateway Village, and a loop around the proposed golf course, will provide more difficulty and length to the trails experience.

Based on considerable public interest, a links-style golf course is proposed south of Belvoir Road and east of the UPRR tracks. Links-style golf is by nature minimalistic. The course design embraces the native, existing terrain; requires minimal irrigation; and blends into the surrounding landscape.

## **Highlights of the 15-Year Plan**

- ✦ *An additional 12.5 miles of hiking trails, 14 miles mountain bike trails, and 10.8 miles of equestrian trails (\$862,700)*
- ✦ *RV Campground, group picnic area, and access road (\$669,000)*
- ✦ *Monumentation, wayfinding, and interpretive signage throughout Ranch and The Big Hole (\$45,500)*
- ✦ *West Reservoir plus amenities (\$3.9M)*
- ✦ *Links Golf Course and club house (\$7M per City estimate)*
- ✦ *East Reservoir plus amenities (\$3.8M)*
- ✦ *Equestrian Center parking improvements and car campground (\$67,000)*
- ✦ *Campground amenities at The Big Hole Gateway Trailhead (\$177,000)*
- ✦ *The Big Hole Rim amenities: ADA overlook (\$41,525)*

**Total Estimated Cost for the 15-Year Plan: \$30.9 M (2008 dollars)**



### *Belvoir Meadow*

Centered around the existing Ranch Headquarters, the Belvoir Meadow area will celebrate the Ranch's history, preserving the corrals, barns, housing, water facilities and pastures. The Ranch Headquarters will also remain as a vital component of the ranching operations, and hay production will continue in the meadows.

Possible future facilities, developed by private partners, include an equestrian center, horse boarding facilities, and other animal-based recreation activities. Other proposed activities include a frisbee golf course, birding and wildlife viewing, and educational/interpretive trails and signage. A 16-site rustic tent campground area will be located near the Ranch Headquarters.

Public access to the Meadows area will be from the west via the Belvoir Road, with limited access to Ranch, City, UPRR and utility vehicles at the existing Borie and Borie Field access points. Equestrian-only access will be available along Otto Road at the Borie Field access.

The East Reservoir area could host a variety of family-friendly recreation activities including fishing piers and group picnicking, as well as provide scenic views and wildlife habitat. If the reservoirs were not developed, the area could still support low-impact recreational activities such as hiking and bird-watching.

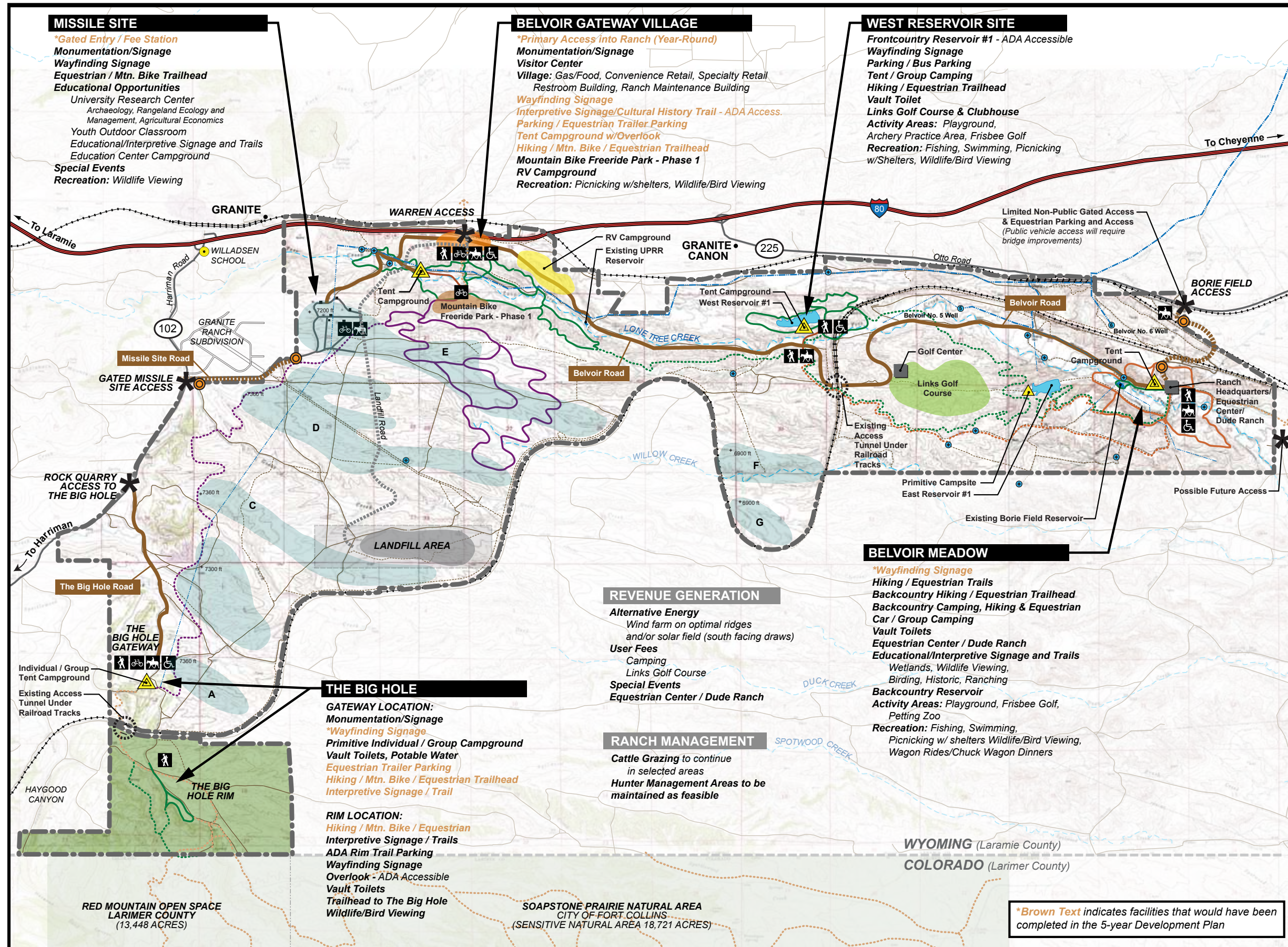
The trail system includes a 1.3 mile loop around the East Reservoir, and equestrians can enjoy over 10 miles of trails looping around the meadow as well as long-distance opportunities along existing two-track roads.

### *The Big Hole Gateway and Rim*

At the Gateway location an individual and group tent campground will be developed with approximately 25 campsites and parking. A 7.5 mile mountain bike trail will connect the Gateway area to a mountain bike freeride park. An ADA accessible overlook and 1.4 mile rim trail provide easy viewing opportunities.

# **INSERT 11x17 15-year Plan MAP**





## 15-YEAR DEVELOPMENT PLAN

- ACCESS POINT
- GATED ACCESS
- CAMPGROUND / CAMPSITE
- TRAILHEAD (HIKING / MTN. BIKING / EQUESTRIAN/ ADA Accessible)
- LARGE EXISTING WELL (BOPU)
- PROPOSED PIPELINE ALIGNMENT (BOPU)
- POSSIBLE FUTURE PIPELINES (BOPU)
- BELVOIR RANCH ROAD
- LIMITED ACCESS ROAD
- INTERSTATE HIGHWAY
- MAJOR ROAD
- GRADED ROAD
- EXISTING TRAIL OR 2-TRACK ROAD
- MAJOR CREEK
- RAILROAD
- RANCH PLANNING BOUNDARY
- THE BIG HOLE CONSERVATION EASEMENT
- ADJACENT PUBLIC OPEN SPACE
- POTENTIAL WIND GENERATION AREA
- PROPOSED RESERVOIR
- EXISTING RESERVOIR

**TRAILS KEY**  
 Note: All trails will be multi-use, but different areas of the Ranch have been planned for more intense use by designated user groups.

- HIKING SYSTEM:**
  - Purpose-built frontcountry trails; short, easy loops near activity centers with ADA accessible segments
  - Purpose-built backcountry trails
- MOUNTAIN BIKING SYSTEM:**
  - Purpose-built single-track loops
  - Purpose-built long-distance single-track
- EQUESTRIAN SYSTEM:**
  - Short loops near activity centers
  - Backcountry trails on existing two-track
- REGIONAL CONNECTIONS:**
  - Proposed multi-use backcountry trails for Belvoir Ranch and regional connections

**CITY OF CHEYENNE WYOMING**

Date: September 2008

0 2000 4000 8000 Feet

NOTE: THE SCALE AND CONFIGURATION OF ALL INFORMATION SHOWN HEREON ARE APPROXIMATE ONLY AND ARE NOT INTENDED AS A GUIDE FOR DESIGN OR SURVEY WORK. REPRODUCTION IS NOT PERMITTED WITHOUT PRIOR WRITTEN PERMISSION FROM THE CITY OF CHEYENNE PLANNING DEPARTMENT.





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## Section 3: Strategies for Financing Capital Development Costs

### INTRODUCTION

This section examines potential approaches to funding capital development costs for Belvoir Ranch and Big Hole improvements. A survey of comparable peer communities, illustrated in Table 1, suggests a variety of strategies.

The largest systems are in the City of Boulder, CO, and Jefferson County, CO, each with over 40,000 acres of protected open space. Fort Collins also has a substantial open space system, with approximately 36,000 acres under management. These cities and counties have dedicated funding for acquisition and development from a sales tax.

Other communities such as Boise, ID and Gallatin County, MT support open space acquisition through a property tax increase dedicated to a bond issue. In communities with a dedicated funding source, most operations and maintenance funding also comes from that dedicated source. Other communities find that operations and maintenance must be supported through the general fund.

**TABLE 1**  
**Peer Community Open Space Acquisition And Development Strategies**

Community	Park or Open Space Acquisition Technique	Operations and Maintenance Funding	Operations & Maintenance Cost per Acre	Dedicated Funding Source
Boise, ID	2-year property tax levy and \$10M bond issue Federal and state land swaps	General Fund	\$3,160	Temporary property tax levy
Boulder, CO	0.40% sales tax 0.33% sales tax .15% sales tax	Sales tax Minor General Fund transfers	\$200	Three dedicated sales taxes
Bozeman, MT	0.33 acre/unit land dedication at subdivision	General Fund	\$2,330 \$25 per capita	N/A
Ft. Collins, CO Larimer County, CO	Revenue sharing with County, 0.25% sales tax	0.25% sales tax	N/A	0.25% sales tax
Gallatin County, MT	\$20 million General Obligation bond issue funded by a property tax increase	General Fund and Bond Issue	\$20 per acre	1.5 Full Time Equivalents
Jefferson County, CO	0.5% sales tax \$160 million bond issue	0.5% sales tax	\$75 - \$90	0.5% sales tax
Cheyenne, WY	General fund	Parks and Recreation, Public Works annual budgets	N/A	N/A

## ANTICIPATED CAPITAL IMPROVEMENT PROGRAM ELEMENTS

While private partners may be expected to develop some of the more significant facilities on the property, for example, the RV campground and proposed Visitor Center, improvements such as trails, trailheads and parking will likely be funded through the City's Capital Improvement Program (CIP). These facilities are traditionally viewed as part of a community's parks and open space system, and are provided as a public benefit to all, with no fees charged. As summarized in the previous section, these improvements are also less costly to construct than some of the items in the 15-year plan, and are able to be phased in over time within a City's existing budget envelope.

The City has several revenue sources that may be able to provide funding for Belvoir Ranch improvements, as summarized in Table 2. The majority of the City's CIP funding comes from the one cent (5th penny) sales tax. The 5th penny sales tax must be approved by voters and expires every four years. The current sales tax expires in 2010. The Fiscal Year 2008 budget anticipated \$11.2 million in revenue from this source and has been allocated to a number of projects. In coming years, the City could identify Belvoir Ranch improvements in the CIP funded by the one cent sales tax.

**Table 2**  
**Potential Funding Sources**

Revenue Source	FY2007 Actual	FY2008 Budget	Notes
One Cent Sales Tax (5th Penny)	\$4,057,757	\$11,250,000	<ul style="list-style-type: none"> <li>- Funds the majority of City's capital improvements.</li> <li>- Lasts for four years and expires in 2010.</li> <li>- Requires voter approval to renew.</li> </ul>
Special Purpose Option Tax (SPOT)	\$5,633,405	\$5,070,062	<ul style="list-style-type: none"> <li>- Optional sales tax for special projects. Expires once revenue goal is reached.</li> <li>- Requires voter approval.</li> <li>- Funds capital projects for Parks and Rec, the Greenway system, the Norris Viaduct, and miscellaneous capital projects identified in the ballot question.</li> <li>- Belvoir Ranch would need to be identified in the next ballot process for the SPOT.</li> </ul>
Mineral Severance Tax	\$2,532,613	\$2,246,667	<ul style="list-style-type: none"> <li>- Distributed annually by the State. Allocated to General Fund.</li> </ul>
Mineral Royalties	\$2,740,756	\$2,727,862	<ul style="list-style-type: none"> <li>- Distributed annually by the State. Allocated to General Fund.</li> </ul>
Municipal Rainy Day Fund	\$4,085,651	\$4,170,501	<ul style="list-style-type: none"> <li>- Surplus Mineral Royalty and Severance Tax revenues distributed by the State. Allocated to General Fund</li> </ul>

Source: City of Cheyenne, Economic & Planning Systems



## USES OF 5TH AND 6TH PENNY FUNDING

The Special Purpose Option Tax (SPOT or 6th penny) is another potential source of funding for Belvoir Ranch. The SPOT is used to fund special projects. The SPOT must also be approved by voters in Laramie County in addition to Cheyenne, and sunsets once the identified revenue need is reached.

Because of existing commitments, SPOT monies may not likely be available to fund Belvoir Ranch improvements for five to six years. Thus, one potential strategy, discussed in more detail in the last section of this document, is to phase in improvements under the 5-year plan in manageable increments using CIP funding, and when SPOT monies may become available, complete the 5-year plan and initiate selected improvements proposed in the 15-year plan.

Other revenue sources for consideration include the Mineral Severance Tax and Mineral Royalties which are distributed to local governments from State taxes and royalties on mining and oil and gas production. Recently, the State of Wyoming has been collecting severance tax and royalty revenue above the statutory threshold which governs local distributions, which in turn triggers the distribution of additional Municipal Rainy Day Fund revenues. These revenues are currently spent on general government activities through the General Fund. The City could consider allocating any excess funds from these sources towards Belvoir Ranch improvements.

## ON-SITE REVENUE GENERATION

### *Wind Power and Alternative Energy Development*

The market for renewable energy, such as wind power, has grown dramatically in recent years, driven largely by states adopting State Renewable Portfolio Standards (SRPS) and by Federal and State incentives for alternative energy production. SRPS dictate by statute that a certain portion of a state's energy needs be met through renewable technologies. Colorado's SRPS of 20 percent renewable energy by 2020 is contributing to the recent increase in wind power development in Wyoming and Colorado. Wyoming has not adopted SRPS.

The City recently entered into an agreement with Tierra Energy (a subsidiary of Duke Energy) to develop a 29 megawatt (MW) facility on Happy Jack Road. Construction of this facility began in April of 2008. The City is leasing the land to Tierra. The lease terms dictate that the City receives 3 percent of gross revenues for the first 10 years, 4.5 percent of gross revenues for years 11 through 15, and 6.0 percent after 15 years. It is estimated that annual revenues to the City for the first 10 years will be in the \$100,000 to \$200,000 range (approximately \$5,000 per MW).



*Ponnequin wind farm south east of Cheyenne*

The National Renewable Energy Lab (NREL) has developed a geographic atlas that rates land for relative wind power potential. Three is the minimum rating needed for reliable wind power, and seven is the maximum ranking. The area around Cheyenne (including Belvoir Ranch) is rated between four and six (“Good” to “Outstanding”) out of a possible score of seven for wind power potential. The City has discussed wind development on the Ranch with other wind power developers. No formal analysis of the development potential has been conducted, but interested parties have indicated that the wind quality at the Ranch is equal to or better than the site at Happy Jack Road, so estimated revenues from that project could be used to calibrate potential revenue yield from a wind energy operation at Belvoir Ranch.

An important constraint to wind power development at Belvoir Ranch is transmission capacity. Currently there is no economically viable access to transmission lines with sufficient capacity at Belvoir Ranch. There are a number of studies underway to address increasing transmission capacity statewide to spur additional wind power development in Wyoming. This process should be monitored closely. If transmission can be made available, wind power development may be feasible at the Ranch. In the meantime, the City could conduct more detailed studies and monitoring of the Ranch to better estimate wind power development potential, which could be a significant and reliable revenue source for the City.

#### *Board of Public Utilities (BOPU) Municipal Water Resource Development*

Belvoir Ranch has significant ground water resources which played a large part in the City’s decision to purchase the Ranch. BOPU is currently studying how much water is available in the resource and how to best develop it. Municipal water systems are not typically developed as profit centers but are operated as self sustaining enterprise funds. Tap fees or hook-up fees recover system development (capital) costs, and user fees are designed to cover operation and maintenance costs.



*Belvoir Ranch has significant water resources*

### *Ranching and Ranch-Based Activities*

Ranching and agriculture are part of Cheyenne's and Wyoming's heritage and culture. There are currently approximately 2,000 acres of land leased to ranchers for cattle grazing. These activities have been determined to be compatible with other recreation and revenue generating activities provided that a management plan is completed.

Currently, the Ranch collects approximately \$140,000 per year in grazing fees. These fees reportedly cover operating and maintenance costs in most years. Grazing is not expected to generate significant surplus revenues that would support development of recreational facilities. The City should monitor grazing to ensure that revenues at least cover costs, and adjust grazing fees if needed.



*Ranching can be compatible with other recreation activities proposed at Belvoir Ranch*

### *Gateway Concessions and Commercial Development*

With its location along Interstate 80, Belvoir Ranch has the potential to serve as a western gateway into the City of Cheyenne. There is an existing highway interchange at Warren Road which has been identified as a primary access point. This area is appropriate for gateway services for Ranch visitors and as an information or welcoming center for the City of Cheyenne. Possible land uses may include:

- Fuel and convenience retail,
- Park visitors center,
- Group picnic facilities, and
- Food and drink and other concession sales.

Most likely, a convenience store with fuel sales would be operated privately, with the City selling or leasing the land to an operator. Other commercial uses such as a restaurant and other concession sales could occur in leased buildings owned by the City. Below market lease rates may be needed as an incentive to operators for taking a business risk at this outlying location that does not have a large supporting population.

Alternatively, selling one to three acres of land for a gas station and convenience store could generate some one-time revenue that could be used to offset some of the initial Ranch development costs. Assuming \$3.00 to \$5.00 per square foot in commercial land value, selling a two-acre site would generate \$260,000 to \$435,000. This is a relatively minor amount of revenue that the City could likely find in other government sources. Land sales should be considered carefully, and balanced with other priorities such as aesthetics and resource (water) protection.



### *User Fees*

Some development on the Ranch will generate revenue in the form of user fees, although these activities will also have related maintenance and operating costs. Currently, the most likely revenue generating activities in the short term are campsites. A number of comparable campsites are shown in Table 3 as a basis for estimating revenue derived from campsites at Belvoir Ranch. In general, campsite fees range from \$10 to \$20 dollars per night. Annual occupancy is typically below 30 percent, although during peak periods in the summer months it can approach 90 percent.

Cabins in the Larimer County, Colorado open space system achieve up to 45 percent annual occupancy, with fees as high as \$60 to \$100. Note that the Hermit Park property outside Estes Park is new and has no operating history. The Curt Gowdy State Park between Laramie and Cheyenne has a bunkhouse and general purpose meeting room that rents for \$75 per night and achieves nearly 40 percent annual occupancy

An estimate of Belvoir Ranch campsite revenue is shown in Table 4. At buildout (15-Year Plan), there would be approximately 88 campsites. The 30 RV sites would generate the most revenue, estimated at nearly \$100,000 per year. Total revenue from campsites is estimated at \$168,000. There would be some operating costs as well, which are not estimated here.

Camper cabins have been proposed at the Belvoir Gateway, in conjunction with an Events or Conference Center. A preliminary estimate suggests that a development of 25 cabins could generate \$125,000 to \$150,000 per year assuming \$60 per night with 25 percent annual occupancy.

### *Naming Rights*

Naming rights could represent another source of funding, if used judiciously. Funding partners might be provided with the opportunity to purchase naming rights for campgrounds, reservoirs, and other facilities, within the requirements of existing County and City policies. If these are employed, commercial advertising should be avoided if not prohibited.

**Table 3**  
**Comparable Campsite Facilities**

Facility	Cabins	\$\$	Occ'y (Annual)	Campsites	\$\$	Estimated Occ'y (Annual)
<b>National Forest Car Campsites</b>						
Vedauwoo Campground	---	---	---	11	\$10	20%
Yellow Pine Campground	---	---	---	19	\$10	20%
Jack's Gulch Campground	---	---	---	70	\$17	25%
<b>State and Municipal Parks</b>						
Curt Gowdy State Park	Bunkhouse & Meeting Space	\$75	39%	135	\$12	25%
Horsetooth Reservoir	7	\$60	25%	120	\$20	25%
Pinewood Reservoir	---	---	---	28	\$15	15%
Hermit Park	15	\$80-\$100	---	---	---	---
Flatiron Reservoir	2	\$60	45%	37		55%
Horsetooth Reservoir	7	\$60	25%	120	\$20	25%
Pinewood Reservoir	--	--	--	28	\$15	15%
Hermit Park	15	\$80-100	--	--	--	--

Source: Economic & Planning Systems

**Table 4**  
**Planned Campsite and Picnic Areas**  
**Belvoir Ranch**

Campsites	5-Year	15-Year	Total	Occupancy	Fee per Site	Annual Revenue
Belvoir Trailhead Car Tent Sites	15	---	15	25%	\$12	\$16,425
Gateway RV Sites	---	30	30	30%	\$30	\$98,550
West Reservoir Car Tent Sites	---	15	15	25%	\$12	\$16,425
West Reservoir Group Site	---	1	1	25%	\$45	\$4,106
Meadow Area Car Tent Sites	---	15	15	25%	\$12	\$16,425
Meadow Area Group Site	---	1	1	25%	\$45	\$4,106
Big Hole Rustic and Group Sites	---	11	11	25%	\$12	\$12,045
<b>Total</b>			<b>88</b>			<b>\$168,083</b>

Source: Wenk Associates, Inc.

## STATE AND FEDERAL FUNDING SOURCES

State and federal funding sources might also be tapped to support capital development costs. These are illustrated below.

### Grants

A number of State and Federal grants exist which have the potential to provide partial funding for Ranch improvements.

### State Grants

- Wyoming Wildlife and Natural Resource Trust – Created in 2005 by the Wyoming Legislature, the Wildlife and Natural Resource Trust (WWNRT) is funded by interest earned on a \$40 million state legislature allocation, annual funds appropriated by the legislature, and private donations with state matching funds. The purpose is to enhance and conserve wildlife habitat and natural resource values throughout the state. A total of \$1.3 million in project funding was approved for 2007 including Belvoir Ranch enhancements. Grants generally range from \$20,000 to \$300,000. Projects eligible for funding include the following:
  - Projects that improve or maintain existing terrestrial habitat necessary to maintain optimum wildlife populations may include grassland restoration, changes in management, prescribed fire, or treatment of invasive plants. These types of management activities could be funded at Belvoir Ranch, or funded on other City properties, thus freeing monies to be used at the Ranch.
  - Preservation of open space by purchase or acquisition of development rights, contractual obligations, or other means of maintaining open space.
  - Improvement and maintenance of aquatic habitats, including wetland creation or enhancement, stream restoration, water management or other methods.
  - Acquisition of terrestrial or aquatic habitat when existing habitat is determined crucial/critical, or is present in minimal amounts, and acquisition presents the necessary factor in attaining or preserving desired wildlife or fish population levels.
  - Mitigation of impacts detrimental to wildlife habitat, the environment and the multiple use of renewable natural resources, or mitigation of conflicts and reduction of potential for disease transmission between wildlife and domestic livestock.

Projects are designated legally as either “large” or “small” in scale. Large projects are defined as individual projects which require \$200,000.00 or more in funding from the WWNRT and projects spanning multiple years will be considered as a single project. Applicants should understand that approval of large projects will require a sufficient amount of time for both board and subsequent legislative review prior to approval.



Projects are required to provide a public benefit. Applicants are encouraged to fully document all public benefits, such as continued agricultural production to maintain open space and healthy ecosystems; enhanced opportunities for outdoor recreation; enhancements to air, land, or water quality; maintenance or enhancement of wildlife habitat; preclusion of soil loss or disease; or other perceived public benefits.

Projects are funded twice annually, with funds made available for approved projects in July and January. Applications may be submitted at any time during the year, but need to be submitted at least ninety (90) days prior to the next funding cycle. Application deadlines are March 31 and September 30 annually.

- Wyoming Governor's Big Game License Coalition/Wildlife Heritage Foundation of Wyoming – This grant program is funded through the sale of Big Game Licenses and administered by the Wildlife Heritage Foundation of Wyoming. Projects typically range between \$5,000 and \$30,000 with priority given to proposals with matching funds, established partnerships, multi-species benefits, management relevance, landscape scale, and the lasting legacy of benefits. Applications relevant to Belvoir Ranch include trail kiosks and wildlife habitat studies.
- Recreational Trail Fund Grant – This program supports trail-related activities that further the goals of the State Trails Program Priorities, the State Trails Plan and the Wyoming State Comprehensive Outdoor Recreation Plan of 1995. Eligible programs include maintenance and restoration of existing recreational trails, trail-head and trail-side facility development, equipment for trail construction and maintenance, construction of new trails where need is shown, easements and fee simple title to property for recreational trails and corridors, as well as trail related safety and environmental education programs. Grants typically range from \$2,500 to \$75,000, with a required 20 percent match from applicant. Construction of hiking, bicycling, and equestrian trails on Belvoir Ranch would be the most likely use of these funds.

### *Federal Programs*

- ***Land and Water Conservation Program*** – The Land and Water Conservation Program administered through the National Park Service provides funding to acquire, develop, or renovate public outdoor recreational lands and facilities. Typical grants range from \$10,000 to \$300,000 with a 50 percent match required. Grant funding would be beneficially towards funding public infrastructure needed on park lands.
- ***Farmland Protection Program*** – This is a Federal program administered through the USDA that offers both nonprofit and government agencies funding to purchase easements to keep farm or ranch land free from development. Awardees are given 50% of the easement's appraised value. If grazing activities are ever discontinued at the Ranch, funding could be used to offset the lost income.
- ***SAFETEA-LU*** – SAFETEA-LU is the Safe, Accountable, Flexible, and Efficient Transportation Equity Act. It is administered by the U.S. Department of Transportation and State Departments of Transportation. Two programs within SAFETEA-LU were identified as possible funding sources for Belvoir Ranch.
  - ***Recreational Trails Program*** - State Transportation Departments are allocated federal funds for recreational trails. The program requires that states allocate 30 percent of funding for motorized recreation, 30 percent for non-motorized recreation, and 40 percent of funds for diverse trail use. A 20 percent match from the applicant is required. Wyoming was awarded \$1.1 million in FY 2007. The maximum award amount for a non-motorized project is \$50,000, and \$100,000 for diversified projects.
  - ***Transportation Enhancements*** - Federal funds distributed to State Transportation Departments are the largest source of funding for trails and related facilities. Over the life time of this program, half of program funding has historically been used for pedestrian and bicycle facility funding. In Wyoming, the Wyoming Department of Transportation screens applications after which they are given to the TEA Local Advisory Commission for evaluation and ranking. The maximum award given in Wyoming is \$500,000 on an annual basis and requires a 20 percent match from the applicant. Possible uses of this program include extending existing trail networks into the Ranch or a bicycle connection between Cheyenne and Belvoir Ranch.



## Section 4: Strategies for Financing Anticipated Operations and Maintenance Costs

### ESTIMATING OPERATIONS AND MAINTENANCE COSTS

The development plan for the Ranch will require one-time capital construction funding as well as an ongoing funding commitment for operation and maintenance (O&M). Using information derived from communities with open space systems of similar size, scale, and amenity level, the following analysis provides a planning level estimate of anticipated O&M expenses based on interviews with staff in peer communities.

On a per acre basis, maintenance costs including staff and equipment range from a low of approximately \$20 per acre in Gallatin County, MT (approximately 26,000 acres) to just over \$3,000 in Boise, ID (approximately \$4,000 acres). Colorado's Front Range counties are probably the most comparable in terms of scale, averaging about 40,000 acres, and in these counties, operations and maintenance costs range from \$75 to \$200 per acre, as shown in Table 5. These systems have a much larger population and user base, however, and their facilities are for the most part dispersed throughout the respective county, rather than comprising one parcel. Thus, the per-acre maintenance costs in these counties may be somewhat higher than might be experienced at Belvoir Ranch, and adjustments should be made to reflect this.

**Table 5**  
**Operation and Maintenance Cost Per Acre and Funding Sources,**  
**Peer Communities**

Community	Operations and Maintenance Funding	O&M Cost per Acre
Boise, ID	General Fund	\$3,160
Boulder, CO	Sales tax Minor General Fund transfers	\$200
Bozeman, MT	General Fund	\$2,330 \$25 per capita
Ft. Collins, CO Larimer County, CO	0.25% sales tax	N/A
Gallatin County, MT	General Fund and Bond Issue	\$20 per acre
Jefferson County, CO	0.5% sales tax	\$75 - \$90

**Table 6**  
**Operation and Maintenance Cost Estimate**  
**Belvoir Ranch Master Plan**

Description	Factors		Cost Range	
	Low	High	Year 5 Estimate	Year 15 Estimate
Peer Community Maintenance Costs	\$75	\$200	--	--
Belvoir Ranch Adjustment (-40 %)	\$45	\$120		
First Five Years	\$45	\$120	\$380,000	\$760,000
Peer Community Staffing Levels	800	600		
Belvoir Ranch Adjustment (+40 %)	1,120	840		
Estimated Belvoir Ranch Staff Requirements			7 FTE 2 permanent, 5 seasonal	15 FTE 3 permanent, 5 seasonal
Staffing Cost			\$200,000	\$400,000

Table 6 illustrates hypothetical operations and maintenance costs at Belvoir Ranch, based on these figures. A 40 percent reduction in cost per acre was made to account for lower usage expected at Belvoir Ranch and the economies of scale inherent in maintaining one large property. The 5-year plan impacts approximately half of the Ranch, and a conservative estimate of operations and maintenance costs might be about \$380,000 when the 5-year plan improvements are fully built out.

Most of these costs are expected to be staff. Using staffing ratios from peer communities, which range from one full-time equivalent (FTE) per 600 to 800 acres, and adjusting the acreage that could be cared for at Belvoir Ranch to account for the more modest level of improvements, full implementation of the 5-year improvements plan is expected to translate into 7 Full Time Equivalents or about \$200,000.

It should be emphasized that these are very conservative estimates. Maintenance activities, which will primarily include trash pick-up and repair of trails, will largely be concentrated in the summer months and could be accomplished with a seasonal workforce, rather than hiring a significant City staff. Some of these activities might even be out-contracted, again resulting in significant savings. Others, for example, trail repair, might be completed by volunteer organizations; Volunteers for Outdoor Colorado is an organization



that performs similar tasks in Colorado open space, and might serve as a useful model for developing a similar program here. Other groups, like the International Mountain Biking Association, also have spearheaded volunteer activities.

As the 5-year plan improvements are implemented, it is recommended that one staff member be hired within the City's Parks Department to oversee the effort, and that seasonal workers be hired for the summer months (estimated May through September) to perform routine cleanup. The one permanent staff member and 3-5 seasonal workers would likely cost between \$75,000 and \$100,000, depending on the wage paid and actual hours worked during the period.

A suggested timeline for operations and maintenance staffing might include the following:

- **Year 1:** Assign a full-time coordinator for implementation of Ranch improvements. This could be a new hire or an individual "detailed" from the Parks Department.
- **Years 2-3:** Using the staffing ratios noted above, and based on the quantity of improvements that are built (e.g., miles of trails, number of campsites, etc.), hire seasonal workers and volunteer rangers/camp hosts, to perform administrative, patrol, and maintenance activities between the "active use" months of April through October.
- **Years 3-5:** Based on quantities of improvements built out, hire one additional staff member and the appropriate number of seasonal workers and volunteer rangers, to correspond to desired staffing ratios.

It is also recommended that the frequency of maintenance activities and hours required be carefully tracked and staffing levels calibrated based on level of improvements and amount of public use. If use levels remain modest or concentrated in selected areas during the initial implementation period, maintenance costs might be substantially lower than originally estimated here.



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## Section 5: Short-Term Priority Action Steps for Implementation

### CONSIDERATIONS IN DEVELOPING A PHASING STRATEGY

The 5- and 15-year development plans are intended to be flexible and allow the City to implement projects as best responds to community needs and funding availability. Seven criteria were identified to aid in bundling groups of improvements into a logical construction sequence over time. These include:

- Respond to public priorities
- Add significant value and user benefits for capital costs incurred
- Complete trail connections – regional and within site
- Provide roadway or utility infrastructure for future development
- Sequenced – focus on incremental completion of key nodes
- Affordable within municipal budgets, grants, and volunteer contributions
- Could be constructed (and operated) by private partners

The diagram below illustrates the logic underlying the phasing of short- and long-term improvements.

#### Summary of Phasing Strategy

Signage

Gravel Parking

Accessible Trails and “Core”  
Loops at The **Big Hole**  
**Gateway** and **Belvoir**  
**Trailhead**

Tent Campground at  
**Belvoir Trailhead**,  
Permanent Entry Road to  
The **Big Hole Gateway**



Remaining parking, trail  
improvements at **Belvoir Trailhead**  
and The **Big Hole Gateway**,  
equestrian and picnic areas and  
parking at **Belvoir Meadow**.

Maintenance facility and RV campground at  
**Belvoir Gateway**; remaining **Rim** facilities at  
The **Big Hole**; playground, tent campground  
and frisbee golf at **Belvoir Meadow**; Links  
Golf Course at **West Reservoir Area**.



*Trail system 90% complete;  
Complete West-East connectivity*

More complex facilities: Visitor Center  
at **Belvoir Gateway**, **East and West**  
**Reservoirs** and loop trail systems, fishing  
docks, tent campsites.



**Table 7**  
**Five Year Plan Implementation Strategy**

Location/Category	Years 1-2	Years 3-5	5-Year Total	Notes
Belvoir Trailhead	\$233,640	\$382,920	\$616,560	Year 1-2 includes signage, earthwork, parking, equestrian facilities, vault toilets, ADA accessible trail and road connection. Campground and remaining trails completed in Years 3-5.
Missile Silo/Special Events Area		\$87,000	\$87,000	Stabilization and assessment completed in Years 3-5.
The Big Hole	\$198,898	\$188,222	\$387,120	Year 1-2 includes all signage and trail improvements and temporary road; road to Gateway is completed in Years 3-5.
Additional Facilities		\$1,500	\$1,500	Additional signage completed as needed in Years 3-5.
Sum of Direct Costs	\$432,538	\$659,642	\$1,092,180	
Soft Costs (Mobilization, design fees, contingency)	\$275,959	\$420,852	\$696,811	
<b>TOTAL</b>	<b>\$708,497</b>	<b>\$1,080,494</b>	<b>\$1,788,991</b>	

## SHORT-TERM CAPITAL DEVELOPMENT PLAN

Table 7 above summarizes a proposed strategy for implementing the 5-year improvements plan. This strategy is predicated on funding key trail connections and associated trailhead improvements at The Big Hole during the first two years, as well as selected parking, roadway and accessible trail improvements at the Belvoir Trailhead. At The Big Hole, a temporary roadway would be constructed to serve the trailhead area, with permanent roadway improvements installed in Years 3-5.

This would allow both activity areas to function as key destinations for users, and in the case of The Big Hole, would connect with improvements planned at the Red Mountain and Soapstone Ranch properties in Larimer County, CO. Funding sources are anticipated to include a combination of Capital Improvement Program funds and grants.

During Years 3-5, additional improvements could be implemented based on public interests, priorities, and funding sources. These might include additional trail segments at the Belvoir Trailhead, a small campground, and the permanent roadway to the Big Hole Gateway.

Table 8 suggests how the remainder of the 15-year plan might be phased in.



**Table 8**  
**Fifteen Year Plan Implementation Strategy**

Location/Category	Years 5-6	Years 6-10	Years 10-15	15-Year Total	Notes
Belvoir Trailhead	\$295,975	\$1,089,578	\$1,250,000	\$616,560	Years 5-6: Complete remaining signage, parking, plumbed restroom, picnic areas, and trails. Years 6-10: Complete maintenance building, RV campground, and road servicing RV campground. Years 10-15: Complete Visitors' center.
Missile Silo/Special Events Area		\$7,000		\$7,000	Complete additional monumentation and signage.
The Big Hole	\$283,000	\$282,928		\$565,928	Years 5-6: Complete remaining Gateway trails and rustic campground. Years 6-10: Complete Gateway road, overlook, and parking.
The Meadow	\$347,778	\$138,600	\$3,742,960	\$4,229,338	Years 5-6: Complete parking and picnic areas, vault toilets, equestrian trails and parking, and interpretive signage. Years 6-10: Complete playground, campground, and frisbee golf course. Years 10-15: Complete reservoir improvements, including fishing docks, swim beaches and trails.
The West Reservoir		\$7,000,000	\$4,432,825	\$11,432,825	Years 6-10: Complete links golf course. Years 10-15: Complete remaining reservoir improvements including fishing piers, picnic areas, campsites, and hiking trails and trailheads.
Sum of Direct Costs	\$933,753	\$8,511,105	\$9,425,785	\$18,870,643	
Soft Costs (Mobilization, design fees, contingency)	\$595,734	\$5,430,085	\$6,013,651	\$12,039,471	
<b>TOTAL</b>	<b>\$1,529,487</b>	<b>\$13,941,191</b>	<b>\$15,439,436</b>	<b>\$30,910,114</b>	

These improvements will largely be driven by public interest and funding availability, especially private funding sources. Improvements would include completing the remainder of the trails system, as well as installing other improvements, like the RV campground, that might be operated by private concessionaires.

Costs are shown in 2008 dollars, and in the out-year plans, have not been adjusted for inflation. Costs include direct capital costs, as well as "soft costs" which include contractor mobilization, design fees, and a 40% contingency, which is appropriate at a conceptual master plan stage.

## ADMINISTRATIVE ACTIONS SUPPORTING PLAN IMPLEMENTATION: A CHECKLIST

This section describes the administrative actions needed to support Plan implementation. They include:

- Developing a staffing plan;
- Establishing an ongoing process for coordinating with adjacent jurisdictions to ensure consistent application of policies and regulations, both with respect to permissible uses, but also to address issues such as use of firearms and alcohol;
- Establishing an ongoing process for coordinating with the State Land Board regarding permissible uses and improvements on leased parcels;
- Establishing an ongoing process for coordinating with the Union Pacific Railroad to ensure access to the property;
- Identifying necessary plans, studies, permits and surveys that would need to be undertaken before improvements can be constructed;
- Developing a plan for increasing community awareness of the Ranch and “marketing” its potential; and
- Identifying immediate grant opportunities.

These are discussed further below.

### *Developing a Staffing Plan for Implementation*

As suggested in the previous section, a full-time staff member, the Belvoir Ranch Project Manager, should be designated to oversee implementation, beginning in the first year. This individual could be a new hire with an open space management background, or could be detailed from the Parks Department.

This individual would be responsible for all coordination with relevant partners regarding the implementation of Ranch improvements, for overseeing the engineering and construction of those improvements, and for overseeing the completion of all studies and surveys necessary to enable construction to take place.

The Project Manager would also be responsible for developing a more detailed staffing plan that would involve permanent staff, seasonal maintenance workers, and volunteer rangers and campground hosts. Because volunteers will

be essential to the smooth operation of Ranch activities, the Project Manager will be responsible for recruitment, curriculum development, and training of these individuals, from the general public, service learning organizations such as AmeriCorps, Youth Conservation Corps, and local colleges. Training would also be expected to involve County law enforcement officials, and perhaps the local community college, which could be engaged to develop a basic medical response curriculum.

The Project Manager would also be responsible for routine coordination with the Ranch Manager regarding the progress of improvements. Because it is desired that grazing remain viable for as long as possible, careful coordination in the routing of trails and siting of facilities, will be necessary to keep as many pastures in production for as long as possible.

#### *Establish a Permanent Process for Interjurisdictional Policy Coordination*

Establishing a process for ongoing coordination with project partners, such as The Nature Conservancy, Larimer County, Colorado, Wyoming State Parks, and the Union Pacific railroad, will be necessary to ensure sound coordination and consistent application of policies.

Abutting the Wyoming portion of The Big Hole are two Colorado open space properties acquired as part of the Laramie Foothills Mountain to Plains project – the Larimer County, CO, Red Mountain Open Space and the City of Fort Collins Soapstone Prairie Natural Area. Consistent with the management plans recently created for both properties, The Big Hole portion of the City of Cheyenne property will follow the same management practices relating to trail use.

Consistent management plans will ensure compatibility between trail use policies, create a seamless transition at the state property line, and implement uniform guidelines consistent with The Big Hole's conservation easement.

Another important area for coordination is the development of consistent policies regarding firearms use and alcohol, that ideally reflect similar practices in City, County, and State parks and open space lands.

One method for ensuring coordination would be to establish a standing committee of interjurisdictional project partners, that might include the entities listed above, Wyoming Game and Fish, and in selected cases, perhaps a representative of core user groups, like mountain bikers and equestrians. This group could meet monthly or quarterly, depending on need, and would provide

a regular forum for policy and administrative dialogue and review.

Coordination with the Union Pacific Railroad will also be necessary to ensure that access is feasible through existing culverts or other grade-separated structures, while also addressing the railroad's security and liability concerns. Regular meetings with railroad representatives should be held to brief them on the implementation of the plan, especially when improvements that are proximate to railroad lines or crossings are being considered for implementation.

#### *Establishing a Process for Ongoing Coordination with the State Land Board*

Regular coordination with the State Land Board will also be necessary regarding actions on the 3,400 acres of leased lands. State Trust lands are managed in accordance with three objectives: (1) better meet beneficiaries' short- and long-term objectives for revenue and investment; (2) improve the manageability of the asset by consolidating ownership patterns or leveraging resources of other agencies; and (3) meet a specific school or community need, including for recreation.

Currently, all state lands that are accessible can be legally used for casual recreation with the consent of the surface lessee, if managed to prevent damage. Because the state owns the minerals under any leased lands, and will most certainly wish to retain these rights, proposed improvements on the Belvoir that traverse these leased lands have been limited to roads and trails.

Easements will be required to construct road, trail, and powerline facilities, and possibly other uses. Easements on state land are authorized under Chapter 3 - Easements of the Board of Land Commissioners Rules and Regulations. As improvements proposed for leased State lands are being considered in more detail, coordination with the State Land Board should take place on a regular basis to ensure that the necessary permissions are secured.

It may be possible to also acquire some of the leased parcels, by making the required Application to Propose a Sale of State Trust Lands. Parcels identified for possible disposal shall be placed on the Category I Disposal List by the Office. The Office will review all parcels appearing on the Category I Disposal List for suitability for disposal. If the Director determines that a parcel may be suitable for disposal, the Director shall move the parcel onto the Category II Disposal List. Any parcel that has not been moved onto the Category II Disposal List within one year, shall be removed from the Category I Disposal List. The entire disposal process is outline in Chapter 26 of the Board's rules and regulations.

It may also be possible for the Belvoir to exchange some of its lands for those currently held by the State, by making the required Application to Propose an



Exchange of State Trust Lands. If the Board approved both the acquisition and the disposal of the parcels comprising the exchange proposal, the Office shall complete the exchange.

### *Identifying Additional Specialized Plans and Studies Necessary for Implementation*

Additional plans and studies will be necessary to support implementation. These will include the following, at a minimum. Elements can be scheduled according to the schedule for development, and need not be undertaken all at once.

- Topographic surveys for areas of significant development, such as campgrounds, parking areas, trails in areas with significant topographic relief and variation, and areas with shelters or structures.
- Detailed cultural and archaeological resource investigations in areas where improvements are planned.
- Wetland delineation and consultation with the Army Corps of Engineers regarding modifications to any riparian areas, to determine if permitting will be necessary.
- Consultation with the State Engineer's Office regarding construction of the proposed reservoirs.
- Geotechnical investigations, if roads or parking areas are proposed to be paved; this will be necessary for appropriate pavement design.

Routine surveys of Ranch visitors and the general public will also be extremely useful in understanding levels and frequency of use and support for new improvements. These surveys could be web-based and hosted and tabulated for a very small financial investment.

### *Identifying Immediate Grant Opportunities*

Immediate grant opportunities are most likely available through the State Recreational Trails Program (maximum of \$50,000) and through the Wyoming Wildlife and Natural Resource Trust program (can award up to \$200,000).

Initial opportunities that might be explored include:

- A grant to provide marked trails and interpretive signage to The Big Hole. Wildlife outcomes could be improved by keeping hikers and equestrians on the trails and out of nesting and foraging areas.
- A grant to develop and implement a comprehensive weed management program.
- A "seed" grant to develop a naturalist program, including recruitment of partners, development of curriculum, and creation of guided nature hikes.

Approved as to  
form only:

ECR

Date: 8-20-08

RESOLUTION NO. 5069

**ENTITLED: "A RESOLUTION ADOPTING THE BELVOIR RANCH MASTER PLAN."**

**WHEREAS**, the City of Cheyenne has purchased 18,800-acres of property intended for public uses including solid waste disposal, municipal water exploration, and open space and recreation; and

**WHEREAS**, a diversity of uses could be compatible on the property; and

**WHEREAS**, a land use plan is desirable to ensure that as improvements are made to the property, future opportunities and constraints can be evaluated; and


**WHEREAS**, the general public has guided the development of a preferred plan for the property by participating in three planning workshops and one hearing at the City of Cheyenne Planning Commission; and

**WHEREAS**, the Governing Body has reviewed the plan's progress during three planning workshops, and three City Council Work Sessions; and

**WHEREAS**, the plan identifies potential land uses, discusses a community vision for the property, describes a management framework for the Big Hole, establishes a decision-making framework of policies to aid in future decisions, and discusses implementation, financing, and management strategies for the property.

**NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF CHEYENNE, WYOMING**, that the Belvoir Ranch Master Plan is adopted to serve as a resource and guide for the future of the Belvoir Ranch.

**PRESENTED, READ AND ADOPTED THIS 8th DAY OF September 2008.**

  
JACK R. SPIKER, MAYOR

SEAL:  
ATTEST:

  
CAROL A. INTLEKOFER, CITY CLERK



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